# Columbia University Quarterly

LH
1
C7Q2
v.18
Dec. 1915-
Sept. 1916
PER

PUBLISHED BY THE
COLUMBIA UNIVERSITY PRESS
VOLUME XVIII: 1915-1916

## EDITORS

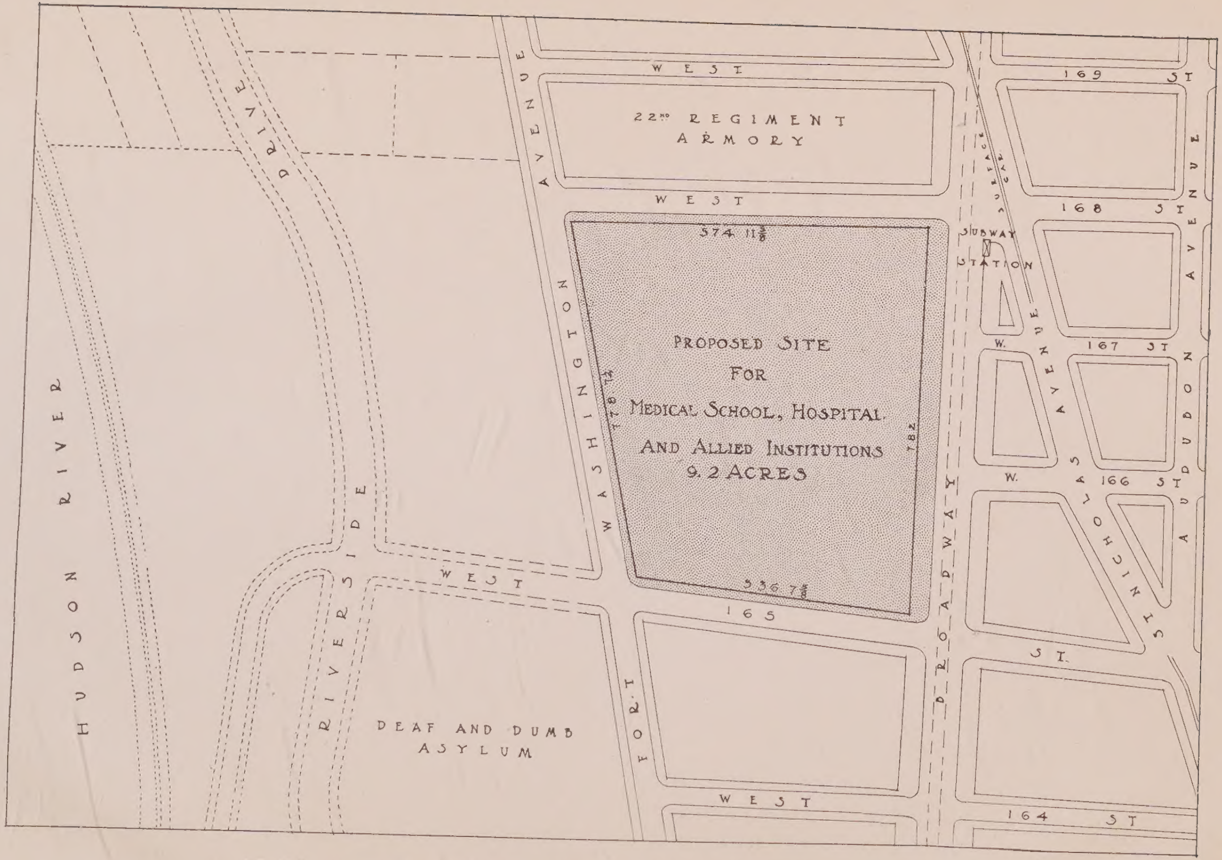
CHARLES SEARS BALDWIN

HENRY V. ARNY
WILLIAM H. CARPENTER
JAMES C. EGBERT
FRANK D. FACKENTHAL
FREDERICK P. KEPPEL
CASSIUS JACKSON KEYSER
RAYMOND C. KNOX

FREDERIC S. LEE
SAMUEL MCCUNE LINDSAY
PAUL MONROE
JOHN B. PINE
THOMAS REED POWELL
M. C. WHITAKER
TALCOTT WILLIAMS

Digitized by the Internet Archive
in 2023

https://archive.org/details/columbia-university-quarterly_1915-12_18_1



PLAN FOR THE DEVELOPMENT OF THE MEDICAL CENTER

COLUMBIA

UNIVERSITY QUARTERLY

Vol. XVIII December, 1915 No. 1

# THE DEVELOPMENT OF THE MEDICAL CENTER IN COLUMBIA UNIVERSITY

THE most important undertaking of the University for many years is the final solution of the problem of site for the development of the School of Medicine and its allied hospital. For this reconstruction the Trustees of the University and the managers of the Presbyterian Hospital have united in selecting the plot of ground at 165th to 168th Streets between Broadway and Fort Washington Avenue. An option has been taken on this property; and it is hoped that the necessary funds will be secured for its purchase at no distant day. The College of Physicians and Surgeons has moved five times during the hundred and eight years of its existence. Its earliest homes were temporary; the first in what is now Park Place, and the second in the present Pearl Street near its upper junction with Broadway. It occupied its third site at No. 3 Barclay Street for twenty-six years, but resumed its periodic journey uptown by moving in 1837 to 67 Crosby Street, where it remained nineteen years. It remained for thirty-one years from 1856 to 1887 at 23d Street and 4th Avenue. During this whole period of eighty years it was a proprietary school and gave a course in medical education on theoretical lines. It had no dispensary, no hospital, and had developed a laboratory for pathology during the last ten years of its life in the 23d Street building entirely through the exertions and financial support of its alumni. Indeed, the Alumni Association was founded, largely through the influence of the late Professor Francis Delafield and other devoted alumni for the principal purpose of providing a laboratory of pathology. The clinical instruction was given either at hospitals where the professors might be fortunate enough to hold positions as visiting physicians or surgeons, or in the College lecture room upon poor patients who were sent to the College from the dispensaries of the City or who were brought there by their physicians "to get the professor's opinion." These beginnings of the highly developed out-patient service of the Vanderbilt Clinic consisted of a single exercise each week in each department.

The College of Physicians and Surgeons moved to its present location twenty-eight years ago, in 1887, and three years later became an integral part of the University. During this period it has owned its dispensary in the Vanderbilt Clinic and its obstetric service in the Sloane Hospital, and has developed the laboratory departments of bacteriology, anatomy, chemistry, pharmacology and pathology to a high plane of efficiency. But, except in obstetrics, it had to rely upon the same chance and opportunity as heretofore for its clinical ward teaching, until four years ago, when the alliance with the Presbyterian Hospital opened the way for the development of the modern clinics in medicine and surgery, the use of which the school now enjoys in that hospital. To give this development full scope, the school plans to repeat its history for the sixth time by moving still farther uptown to a larger site. There all directions of medical education can be harmonized in a single system; for the school, the Presbyterian Hospital, and all their dependencies will be located on one piece of ground. The school has outgrown its present quarters in every department except in that of anatomy and in the Sloane Hospital, which was enlarged to a full equipment three years ago. The new site, containing more than nine acres of land, promises a permanent home for the medical department of Columbia for many years. Never before has the school had an opportunity to secure a home in which it could expect to own land for such future growth as this acquisition will provide. The portion not demanded at present by the school proper, the Vanderbilt Clinic, the Presbyterian Hospital, and the Sloane Hospital, will insure that future development which must be contemplated by every vital educational institution.

For the immediate development of the school as a great medical center the plans comprise in each clinical department an institute equipped completely in the sense of the foundations for such purposes at the European centers of medical education. Every such clinic must contain an out-patient service, equipped for the scientific treatment of the ambulatory patients and for the teaching of its medical specialty. In addition there must be a ward service of a sufficient number of beds to care for patients confined indoors. And finally, the laboratories for research, operating rooms for the surgical specialties, and living rooms for the resident staff which are essential to the modern study of disease will, of course, form a part of the hospital development of each clinical unit. The departments of medicine and surgery should control at least one hundred and fifty beds each, while such other departments as those devoted to diseases of the eye, of the throat, of the ear, to orthopedic and urological surgery, will control at least twenty-five beds. Other departments covering a wider variety of diseases, such as those of neurology, of skin diseases, and of diseases of children, will be supplied with services of at least fifty beds. The ward service in all these departments will be developed in connection with the new Presbyterian Hospital, or possibly in some cases in special hospitals which may secure an alliance with the University and build on the adjacent land as separate institutions. The out-patient services, or dispensary, will be represented by an enlargement of the Vanderbilt Clinic upon the lines which are already indicated in the present organization and building of that institution.

The scientific departments connected with the early years of training in the medical school will be supplied in their new quarters with greater space for the extension of their work in research as well as for the installation of new equipment in teaching. The departments of bacteriology, pathology, and chemistry will secure an opportunity for linking their work to the clinical departments in the hospital more intimately than has been possible in the present isolated situation of the school. Special sub-departments, such as serology, will be developed to a greater perfection; and the new heart station which exists in the department of physiology will become more eminently clinical than is now possible.

One of the principal advantages to be secured at the new site will be a dormitory for the medical students and the junior officers of instruction, both in the clinical branches and in the laboratories and scientific departments. In this way alone can the students of medicine, who form probably the most hard-working group of students in every university, be supplied at Columbia with the possibility of living in a healthful and stimulating environment. This new departure in medical education will create an institutional life which has never before been possible in any large city. The erection and endowment of this dormitory will carry with it a dining-hall and rooms for social association which have, in the past, been characteristic of undergraduate communities rather than of such a student body devoted to work in any professional school. The establishing of such a communal life in the medical school of Columbia will lead to great advantages, not only in elevating the tone of the work of the student body, but also in building up a tradition of mutual helpfulness and an opportunity for interchange of scientific ideas among the general officers of instruction in all the departments of the school.

But the building of such a medical center has no less significance for the city and the nation. It will add to the hospital organizations of New York City a large general hospital fully equipped to care for patients of all ages and of all medical specialties. It will provide not only for those suffering from the ordinary diseases of internal medicine and surgery, but also for those ill with the diseases usually studied by those physicians who are specially trained in the more limited fields of research in the organs of sense and in particular parts of the body. Such a hospital the city has developed in the new Bellevue at 26th Street and the East River; and these plans of Columbia will supply to the sick poor of New York the same advantages on the west side and for the upper portion. In this way the original plans of the committee on hospital development of the State Charities Aid Association for two large general hospitals with secondary local hospitals will be carried out in the most efficient manner. The present growth of the city following the development of its subway system points to the upper west side as the best site now unoccupied for such a large hospital project. Beyond these immediate benefits stretch such widening opportunities of public service as are characteristic of Columbia's responsiveness to the whole nation. For when these plans have been fulfilled, the University and the Presbyterian Hospital will have added to the philanthropic and educational opportunities of New York City both a school of medicine and an institution for the care of the sick quite commensurate with the dignity and opportunity of the city and in service to the nation second to none in existence elsewhere.

Samuel W. Lambert

# MAGIC AND MEDICINE*

IT is a pleasant academic custom, established of late years in this school, that the incoming students shall be welcomed, not only by the President of the University, but also by a member of the faculty, through the medium of an address, fortunately somewhat delimited as to time, usually devoted to some general aspect of medical practice or to some phase of the contributory sciences. This year the honor has fallen upon me, and I purpose to use the opportunity to call your attention to an important aspect of human psychology which has existed as long as the human race itself—was, indeed, fully developed before medicine as such was divorced from religion—but now remains chiefly as one of the subconscious vestiges of the mind, a spiritual remnant, quite as in the body we still find vestiges of the gill-slits inherited from our far-distant ancestors who swam about in some primeval sea. And just as these branchial clefts and arches remind us of our lowly anatomical origin, so also do the mystical yearnings of the mind point back to a period when the cave-man looked out upon a world full of terrifying portents, which his spiritual advisers, after proper incantations, warned him could be overcome only by suitable offerings to the gods—a practice still in vogue.

An examination of the relations between magic and medicine during that early period, although of great anthropological interest, we must of necessity pass over, turning instead to our own day, to this complex and puzzling age which we so fondly think is governed by the cold light of reason; and in so doing we must, to paraphrase Spinoza, be most careful not to laugh at the actions of mankind, not to groan over them, not to be angry with them, but to try to understand them.

A full century has passed since Waterloo marked the freedom of Europe from the militaristic domination of Napoleon and offered to man that liberty of thought and action which was acclaimed by all but a few reactionaries as enabling each to accomplish what had before seemed impossible, the releasing of all individual energies for moral, social, and scientific achievement. And what has not that century of supreme and united effort brought forth! To-day we boast such freedom for the soul that no one knows quite what to believe and so believes that which he prefers, so definite and final a code for moral action that the minds of the people of this country oscillate between peace at any price and war at any cost, such wide-spread brotherly love that never since the world began have in one short year so many men fought face to face and laid down their lives with unimaginable heroism for what they thought a duty. Never have the benefits of human culture and efficiency been so perfectly demonstrated upon a recalcitrant world by bayonet thrusts and shrapnel. The marvellous developments of chemistry are far less clearly shown in the synthesis of useful dyes and healing drugs than in the ability conferred upon mankind to destroy his fellow creatures by suffocating gases or by liquid fire of such exquisite potency as to make death from that used by the somewhat illiterate and incompetent Greeks almost a pleasure, and to cause Torquemada to blush with envy.

---

* An address delivered at the opening of the College of Physicians and Surgeons, Columbia University, on September 29, 1915, and reprinted, by kind permission, from The Journal of the American Medical Association, volume LXV, page 1959.

Nor have we been willing to confine the blessings of this modern civilization, born of the new freedom, to our own people, but have generously, and occasionally forcibly, conferred them upon other and more benighted races, so that to-day no Chinaman need suffer for lack of opium, no South Sea Islander be denied his alcohol and syphilis, no Indian but can enjoy, with some slight restrictions, the commingled benefits of whiskey and tuberculosis.

With such a record can any one deny that the human race is approaching spiritual perfection? Has not our own country set the pace? Have we not more universities than any other? Even though certain safely endowed cynics do call attention to the annoying fact that some institutions still confer their Ph.D. degrees *in absentia*, after only a moderate amount of correspondence and the receipt of a small fee, have we not more popular, if somewhat superficial, education than any other country in the world? Do we not show the wonderful results of civilization in that we manufacture more pig iron, mine more coal, send more telephone messages, consume more patent medicines, than any other?

In response to this revaluation of all values, medicine too has risen from its humble beginnings in priestly incantation to a point where its leaders declare it to be a science and no longer simply an art. To-day we smile at the cautery and boiling oil of a surgery of bygone ages; for now the burns of radium and Röntgen rays, in virtue of their magic qualities, have, as Sganarelle has said, "changed all that." The mere mention of the prescriptions of a Malay magician, embracing scorched cat's whiskers and other equally valuable remedies, brings a smile to the face of the recent hospital graduate who prescribes from a sample package of the latest synthetic drug from Germany, just left at his door by the postman and proved to be of the highest value, because, first, the advertisement says so, and second, it has been tested on ten dogs and twenty rabbits—a much more scientific method than trying it on man. The fortunate patient also escapes the bad-tasting mixtures of his childhood and knows that his physician is progressive and ahead of the times, since no article commending the drug has as yet appeared in the monthly magazines.

What country lad, suffering from that digestive remorse which so often follows an assault on a neighbor's apple tree, but would appreciate the modern improvement over castor oil and minted ginger, to be found in psychotherapy or even the Emmanuel movement, or, if willing to stray from the straight and narrow path of regularity, would not prefer absent treatment from a Christian Scientist or manipulation by an osteopath. What pious spinster but would acknowledge the glories of modern therapeutic achievement in the discovery which enables her to enjoy in the innocuous form of a widely advertised tonic her daily or thrice daily cocktail, and still remain a zealous and esteemed member of the W. C. T. U. From these serene heights of scientific medicine we can well afford to treat with contempt such unfortunate aphorisms as that attributed to the greatest of medical comedians: "The only thing the matter with the quacks is that they cure so many people," and to regard with satisfaction the ominous gloom which has suddenly snuffed out the literary light who composed that libel upon the medical profession, "The Doctor's Dilemma."

Yet sometimes this wonderful science of medicine does not seem to be a wholly satisfactory guide. You, as future practitioners of medicine, have still before you the pleasure of dismissal from the care of some small patient upon whom you have spent all the scientific acumen with which your teachers will endow you in the next four years, because in grandmother's day it was not necessary to make such a fuss about baby's milk. "All of her children, and she brought up ten, took milk straight from the cow, and nobody ever thought of modifying it." And when after you have in desperation told the mother of the next small hopeful that it will be enough just to put a little lime-water in the bottle, and have been promptly displaced by Dr. Blank, who is "so much more intelligent because he knows exactly how many calories each bottle contains," it will be small comfort that you are perfectly well aware of the fact that Dr. Blank never heard of a calorie until a few weeks before, and thinks it means something about germs. When you have been replaced because you listened to grandmother's chest with your ear, showing that you knew nothing of modern medicine, or supplanted because you did use the offending instrument, showing that you must have bad hearing and really could not know that she had pneumonia from your knowledge of her constitution,—when, as I say, all these things have happened, you may begin to wonder whether there is not some defect in your medical education. Then, when you see the street in front of the house of Dr. Blank, whose medical standing is questionable, but of whose financial ability there is no doubt, filled with the automobiles of the rich who are taking the latest "sure cure" for cancer or tuberculosis, or having their souls analyzed by the newest method, which "feels just like the confessional and reveals such awful things in one's past, but must be all right because there was a long article about it in the September *Century Magazine*," it will be slowly borne in upon you that there must be some things not taught in the curriculum.

And what is the foundation for all this lack of appreciation of the last word of medical science? We must apply a sort of Freudian analysis to the collective mind of the community, and in so doing it is extremely important that we remember the changed conditions of thinking which have come over medicine, for to these is due some of the present condemnation of the profession. In the older days all possible facts on which to base a diagnosis were obtained by talking with the patient or his family, and by making a simple—usually a very simple—examination of such portions of his body as were visible without removing more clothing than was conventionally considered to be within the limits of modesty. The discussion of such facts between a physician and a consultant, and even the mental processes by which the diagnosis was reached, bore largely upon matters with which the patient and his family were familiar, and the only way in which the practitioner could gain the desired effect of great wisdom was by concealing his method of reasoning and the nature of the medicine prescribed. The more ignorant he was, the more obscure were both. Hence, the further back we go in the history of the art of medicine, the more mystical the methods of diagnosis, the more complex and fanciful the drugs.

Nowadays, no attempt is made by the intellectually honest physician to obscure the methods of diagnosis, nor the results of the scientific reasoning, nor is there anything mystical in the treatment. We sift the testimony of the patient and his friends in the light of the known untrustworthiness of human evidence, and ask that a large portion of the diagnostic information be written records obtained often by chemical or biological methods beyond the manipulative skill of the physician himself. The stress so often laid upon such records has led the patient of to-day to feel that if he has access to them he can make as good a diagnosis as the physician. Indeed, it is not uncommon to have one of the modern, highly educated neurotics bring out a vast pile of analyses, sometimes so poorly done as to be of no value, lay them before the physician, proceed to inform the latter of the real condition from which he is suffering, and, then, if not flattered by instant approval, leave for some more amiable and perhaps more wordly healer, but ultimately to form the material upon which the quack fattens his bank account.

Thus it is that a not inconsiderable portion of the community, especially those who have achieved success through their business ability, the while they glibly state that the physician is a fool in business, forget that the converse also may be true, and on the intellectual basis of a course in medicine obtained from the Sunday supplements of the daily press and a few popular magazine articles on the medical fads of the moment, pass judgments on the methods and results of medical art, which would be amusing if they were not so pitiful. For none of these men would for a moment consider the investment, even of other people's money, in a business scheme of which they had so little fundamental knowledge as they have of the medical subjects they airily discuss. The inevitable result of this superficiality in judgment, largely due, I believe, to the lack of thoroughness and mental discipline in our popular education, is an underestimation of the real ability of the physician and an overemphasis on the practical value of surgery, both temporary phases certain to be adjusted in the course of time.

And so we see as a consequence that in its search for something to satisfy its desire for magic, a something which the scientific physician no longer supplies, a portion of the public has turned in another direction which leads to Christian Science and osteopathy. Each of these is singularly adapted to fill a mind of a certain type: the first, because of its aura of religion; the second, through its appeal to the practical as "doing something." The era of indiscriminate pill-giving by the physician having passed, it is hard for a patient to surrender a considerable fee for mere advice—usually irritating because so evidently just; but a half-hour's massage and manipulation have a real cash value, even if they do not cure all maladies. The practitioners of each of these trades are usually well endowed with that insight into human nature to which the physician is often indifferent, and know how to supply that suitable atmosphere of mystery for which so many still yearn.

In justice we must admit that perhaps the public is not altogether at fault in its attitude toward some phases of medical practice, for an insidious form of higher quackery is not infrequently exhibited by a certain type of physician who through the use of a majestic array of instruments or reports of complicated chemical analyses, of the real import of which he is often ignorant, seeks to conceal his intellectual nebulosity and to impress his more desirable and wealthy patients with his scientific equipment, just as did the doctor of a generation past with a dusty microscope, never disturbed from beneath its bell-jar, or the quack of a still older period, so lovingly satirized by the Dutch artists, with his consulting room decorated with skulls and stuffed reptiles. An appeal to magic, all of this, though the modern chaser of diagnostic ichthyosauri may not see the connection. Sometimes the patient does.

A remarkable example of crowd psychology, affecting both the medical profession and the lay public and showing the appeal of the occult, was seen in connection with the Friedmann tuberculosis cure a few years ago. The cure was exploited, apparently, by a syndicate which shielded itself behind the discoverer, who was probably perfectly honest in his belief that the bacterial cultures which he used had some value in the treatment of tuberculosis. In Germany the remedy met with a cold reception; but in this country, owing to the great advertising value of the daily press, to the pseudoscientific way in which the whole question was ventilated, even before Dr. Friedmann's appearance in the United States, and to the opposition of the medical profession to the use of this secret remedy, considerable sympathy for Dr. Friedmann was aroused, even among the intelligent, and there resulted a rather bitter feeling toward the medical profession as jealously preventing the public from benefitting by a marvellous discovery—somewhat as to-day the attitude of a portion of the press on the subject of "twilight sleep" is that the physicians have banded together to defraud the people of something valuable. If the newspapers would only publish the facts behind all these affairs, the public would be quickly disillusioned; but cold facts are rarely of news value, and we must remember the retort of Charles A. Dana to a young reporter who approached him with a news item concerning a man who had been bitten by a mad dog. "That is no news," said Mr. Dana; "go out and find a mad dog that has been bitten by a man, and we will give you plenty of space for the story." It is the sensational which appeals to the mass, not necessarily the true. When once a sensation gets well under way, it is wonderful to see how it is reflected from one portion of the country to another, appearing again and again in more and more distorted form, until in the boiler-plate page of the country weekly it finally loses all semblance to the original. Until we realize that the vast majority of the people of this country read nothing but the newspapers, and have few opportunities for obtaining accurate information by word of mouth from physicians or informed laymen, we shall not understand how merely printed matter can have such great influence. The wildest newspaper statement is absolutely believed, and however shrewd the individuals may be, yet when gathered in a group or united by a common emotional topic they undergo that curious physical alteration which Voltaire, the first of the crowd psychologists, noted—their ears elongate. And what would be rejected as nonsense by the individual is accepted by the crowd, which is swayed either by self-interest, self-pity, or that love of the mysterious bequeathed us by our cave-man ancestors.

Nor does the magic of a phrase stop at the crowd; it involves men of scientific training, and illustrates another aspect of mystery in the field of medicine. Let me read you a paragraph from the report of the hearing before the Committee on Mines and Mining of the House of Representatives of the Sixty-third Congress on January 19, 1914:

"Radium goes further than surgery, like the blessed light from heaven above, bathes the part, throws its gamma rays, which are its active rays, into the part, acting on all the myriad microscopic cells like millions of microscopic knives to destroy them or like a lash to drive them back. In other words, radium will not only do what surgery does, but it goes beyond it and takes a class of cases which are utterly beyond surgery. It has wonderful possibilities in chemistry and physics—marvellous possibilities. One can not let oneself dream about it."

Of course this is emotionalism, not reality, but why does this man of education and culture speak in this way? What is there in this element radium which so warps men's judgment that they tell only of successes and forget to mention the vastly greater number of failures to cure? First, there is its great rarity. The human race has always treasured things difficult to find or to make, even if of little intrinsic value. Then, in this new element, also, are centered a fascinating series of qualities, simple enough to-day to the physicist, but still mystical to the public. Radium gives off heat; its molecule explodes into a heavy metal and a gas which bombards the walls of the container; it gives off rays which will pass through a foot of lead and take a shadow photograph on the other side of this dense mass of metal; it will burn the tissues just as the x-ray burns, somewhat less rapidly and less effectively than a red-hot piece of iron, but much more quietly and mysteriously, since the burn does not appear for a week or more. The writers of scientific papers even speak of the "magic power of radium," but magic only because we do not understand it; and when its physical qualities are fully understood we shall hear very little about the use of radium in the treatment of cancer. For in spite of all the statements made in the daily press about the wonderful cures which radium produces, we know to-day that it will certainly cure only a very small number of cancers and will do nothing which can not be done by surgery. The result of the furor and publicity is, however, that it is now not always possible to get patients to submit to surgery for the removal of a tumor; they are so anxious to be treated with radium. The farmer in the furthest New England hills, reading in his weekly paper that radium is a certain cure for all kinds of cancer, comes to town refusing operation which might save him, only to fall into the hands of the nearest quack who has a little powder in a tube.

Such is the power of the press, moulding the uncritical opinions of the people in virtue of the mystical which it celebrates. This influence of the mystical affects us all. Do *you* refuse to open an umbrella in the house, or cross between the carriages of a passing funeral? Do *you* avoid going underneath a standing ladder, or knock on wood lest your boasting bring bad luck? Probably you do, not because you are superstitious, but because, as a witty friend of mine once said, when accused, he liked to be on the safe side.

And now we must pause, not for lack of further apt illustration, new examples of which will soon be furnished you from your own experience, but because the natural limitations of human attention must be respected, and drawing in the net, survey the catch, dealing leniently with the human frailties within. For are they not a part and parcel, obscure and stupid as they seem, of that yearning for a power and perfection beyond the mere limitations of the flesh, which has led men on for all time? Do they not represent a blind appeal to something superior and more permanent than human life itself, something not evident to the senses, too subtle for the balance of the physicist, not to be captured in the test tube of the chemist, capable of diversion to evil ends when exploited by the unscrupulous, of infinite power when used by the wise for spiritual development?

The remedy for the evils is simple enough—education. With the deepening of real knowledge comes intellectual charity, while a diminution in the sensationalism of the press and a corresponding increase in the clarity and honesty of such medical information as is suitable for the public, the really excellent educational campaigns now being conducted by physicians through the publications of medical societies and reports of public health officers, and the most effective propaganda of the American Medical Association and of certain publicists who have raised their voices against the widespread sale of quack medicines—all these will abate somewhat the density of popular ignorance. For it is our duty as physicians to lead in this reform by refusing to be limited by a narrow professionalism, both in education and in practice, and by entering more and more deeply into the life and problems of those for whom we care, to regain that position of intellectual leadership which some of our great predecessors held in virtue of the fact that they were first of all, great *men,* and only secondly, accomplished practitioners of an ever-widening art. And it is with that suggestion that I welcome you to the study of the broadest of all professions, whose interests touch all sciences and to which nothing human is without value.

FRANCIS CARTER WOOD

# REMINISCENCES OF RECENT YEARS AT THE COLLEGE OF PHYSICIANS AND SURGEONS

(*Hoc erat in votis*)

THE present period is a momentous one in the history of the Medical Department of Columbia University; for it holds the prospect of realizing the long deferred, yet never relinquished, hope of the School for close and intimate union with a general hospital, now at last taking definite form in the proposed rebuilding of the Presbyterian Hospital and the Medical School in juxtaposition on a new site. The appreciation of the need of hospital facilities for the instruction of her students is as old as the "P. & S.", in literal fact older; for in the correspondence of John Bard with his son Samuel, then a student in Edinburgh, but afterwards the first Professor of the Theory and Practice of Physic in King's College, whose name the senior chair in Medicine now bears, occurs this passage:

"I much approve of your emulation with respect to the establishment of a proper Medical Institution in this City, but I believe that it should be commenced by a public Hospital."

Until the affiliation with the Presbyterian Hospital, this most sound principle and, from our present view-point, indispensable condition of medical education could not be fully realized; and it were tedious even in thought to go over the long and vexing history of make-shift and temporary expedient, by which in a city richer than any other in clinical resources a barely sufficient opportunity was obtained for the education of our students. But if the school has found difficulties here and long delay in gaining full expression of her ideals and, what is perhaps more important, of her ideas of education, it is not an altogether unparalleled chapter in her history; and it is desired to emphasize here that the very difficulties encountered and often surmounted have not been without effect upon the quality and temper of her collective mind. For it would be a mistake to attribute the rapid development of the

Medical School in recent years to a series of happy accidents or to stimulation from without; it is rather the fact that opportunities have been utilized as they presented themselves to meet long felt needs and carry into effect premeditated and matured plans.

The changes of recent years have been so rapid and profound that it is difficult for most of us to form any comprehending notion of what medical education was, say thirty years ago. I choose this period because it happens to coincide with the term of service of the senior professor of the Faculty of Medicine; and his recollections suffice, for those of us who are not antiquarians, to evoke a past when most of what we consider essential to a medical education was omitted from the medical curriculum. A student might then graduate in three years, or if he preferred in two; it was in his choice whether he should dissect or not dissect; microscopic anatomy and pathology were taken by special arrangement; there was clinical teaching, but the bulk of the instruction was given in didactic lectures. Notwithstanding, and this is to us the incomprehensible thing, soundly trained and efficient physicians were produced, who served the community ably, developed their special lines of work, and made their contributions to the art and science of medicine. Francis Delafield was then acquiring that marvelous knowledge of clinical medicine and of pathology which made him one of the greatest teachers of medicine that America has produced. McBurney was developing his admirable technic, and bringing his knowledge of anatomy to bear upon his surgical problems, with the result of radically altering and improving the procedure in abdominal operations. His fundamentally important work upon appendicitis is too well known to require more than passing notice here; but it is profitable to recall, as illustrating the advantage of departmental tradition, that his predecessor Sands was the first to operate deliberately upon suppurative appendicitis. At the same time Prudden was laying the foundation of the department of pathology, and more, in a dark and dingy tunnel of a place in Twenty-third street, that had formerly been an ice-cream parlor. Delafield and Prudden embodied the results of their observations and research in a text-book of pathology, the first important work of this type of American origin. After many editions and revisions, and now under the editorship of Professor Wood, it continues in use in this school and in many others.

In the department of pathology, courses were organized for the teaching of histology, bacteriology and clinical pathology. Designed originally to meet the needs of undergraduates for elementary instruction, they have all been developed as occasion offered—to be precise as funds were available—into departments or subdepartments, conducting advanced study and investigation as well as routine didactic work. A development analogous to that from a course to a discipline comes to pass in the persons of the instructors, not only in these but very generally in the other science departments of the school. A man normally begins his investigations with his first course, and the inquiries that arise in his studies for didactic purposes give an impulse and direction to his first investigations. Thus his course, however elementary, becomes critical from the outset, and the students escape the danger of stupidly memorizing what they but half understand, and are familiarized early with what is after all the life of science, the spirit of research. Trained in this atmosphere, many of us find it hard to believe that a valid division can be made between teaching and research; their relation is so intimate, they so mutually support each other and blend in the mind and personality of the individual, that they can hardly be disjoined without disturbing that natural and gradual awakening of curiosity, that continuous development of thought and purpose, by which the junior instructor passes into the investigator, without an idea that he has substantially altered his attitude or given a new direction to his energies. While this may be to some extent a personal view and open to the charge of subjectivity, it is at least held by many; and it is certain that modern medical opinion holds strongly that the medical student has a right to be taught by investigators, that, in fact, medical education is inconceivable on other terms.

In following the growth of these disciplines, evolved for us in this college out of the department of pathology, and the effects produced by their history on the educational views of the medical school, I have digressed somewhat from the order of events, and would now return to the second of the laboratories to be established, that of the department of anatomy. It beseems me not to say all that might be said of this department, for I have the extreme happiness to be a member of its staff. One or two facts of its history under its present head may be mentioned for their general interest. Dissection, which previously had been voluntary, was made obligatory, and section-teaching was introduced, I believe for the first time in an American medical school. The method, as far as anatomy is concerned, consists in the exhibition or demonstration of the material to small groups of students by the instructor, who until recently bore in consequence the time-honored title of demonstrator. This method of teaching enjoys a wide vogue today, though in the place where it was introduced it now, in view of the greatly increased attendance, threatens to break down unless additional instructors can be provided. The contingency of largely increased classes is one which the University as well as the Medical Department has dealt with repeatedly without lowering its standards; provided that these can be maintained, the larger attendance is but the opportunity of larger service.

It is interesting to recall an episode in the history of the department which goes far to show that the training of a body of students is not the heaviest didactic labor which may devolve upon a teacher. A former Dean of the Medical School found himself perplexed by doubts as to the propriety of the professor of anatomy's devoting his academic leisure to the pursuit of comparative anatomy and of embryology, and doubts redoubled as to whether his desire for a laboratory in which to conduct these studies was one that a medical school could countenance. To resolve these doubts, a special meeting of that faculty was called; and to the credit of that body be it recorded that it declined to discuss the subject, voted unanimously for the scientific view of anatomy and adjourned within a quarter of an hour,—an example of intelligence which is not unique, but an economy of professorial time which one might wish were customary. Thus it became possible for the department to revive the sound and honored tradition of its discipline by extending its inquiries to the whole field of vertebrate morphology, including comparative anatomy. In the United States the usual failure to combine comparative anatomy with embryology is largely responsible for a rather limited concept of the field, even among workers of good ability.

With this cursory glance at what may be termed the beginning of the modern epoch in medicine as exemplified at the "P. &. S.", we may turn to the brief but active recent period, which is within the recollection of the younger men at the school. The student matriculating twenty years ago found himself a member of a class of more than two hundred, ranging in their pre-medical education from college graduates to graduates of the high school. Not unnaturally in a course that, whatever its limitations in facilities for instruction, was yet administered on graduate lines, many for want of preliminary training were speedily eliminated, the loss in some classes amounting to fifty percent in the first year. The course had recently been increased to four years, but was in detail very different from the present one, chiefly in the smaller opportunity afforded the student for contact with his material, in the laboratory as well as in the clinical disciplines. For dissection there was abundant time and relatively abundant material, and during the first two years a majority of the students spent most of their days and many of their evenings in the dissecting room. Section-teaching was given at frequent intervals, and the position of the prosector, with the duty of preparing the material for demonstration, and the accompanying privileges of ascending to the dissecting room by elevator, and of access to it after closing hours at night or on holidays, was sought with eagerness and emulation by the students of the first and second years. Leisure for this concentration of effort upon anatomy accrued from the small amount of laboratory work offered by other departments. Physics and organic chemistry were given to those who had not had them prior to entrance, and an excellent course in histology was administered by the department of pathology. This, for those excused from chemistry and physics, was the only laboratory work open to junior students. Physiology was taught by lectures and an admirably conceived and conducted series of demonstrations to sections of the class, which, however, made no large demand upon the time of the individual student. Anatomy was therefore the topic in which he had freest access to the material of his study, and the spontaneous reaction of the student body was a sign of healthy objectivity, and inspires confidence in a type of curriculum in which the student may be entrusted with all the leisure and liberty of election consistent with the fulfillment of the course as prescribed by law; for the "wisdom of a learned man cometh by opportunity of leisure"; in which may perhaps be found a clue to the lamentable fact that sometimes "knowledge comes, but wisdom lingers," in the case of academic persons as well as undergraduates.

A feature of the former instruction in anatomy, which sticks in the memory of those who survived it, was the practical examination. In this the student was confronted successively by his several demonstrators with specially prepared dissections and other material, which he was required to examine and describe,—a mode of testing proficiency far more searching and reasonable than the prosaic written examination now in vogue. It may be noted in passing that the practical examination in clinical subjects is continued by the medical boards of hospitals, and it is proposed to introduce it in anatomy also by some of the State boards of licensure. As conducted in the "P. & S." it consumed most of the demonstrator's time for three weeks, and hardly less of the student's; for though it culminated for him in a vivid ten minutes, to prepare for it he usually absented himself from all other exercises for such a period as he deemed necessary to render himself as nearly as possible hysterical, and after it again, to rejoice or lament and recover his equilibrium. For this reason the practical examination gradually grew into disfavor with other departments and eventually was discontinued. A perfectly proper didactic method here failed because of the temperament of the American student, and perfectly properly was abandoned, though to those of us who remember the not wholly unpleasant mixture of apprehension and excitement of those crowded moments, the course seems to have lost something of its tang and incisiveness.

In other ways too the quality of the student mind has necessitated changes in didactic procedures, notably in the matter of recitations. The trait which occasions the need of these exercises is seemingly a certain want of self-confidence, resulting in part from the newness of the topics, the large extent of ground covered together with rapidity of the course, and last but by no means least, from a sincere and sober modesty, which is in the atmosphere of the school. It may seem that the demand for drill and recitations is the defect of the virtue, and represents a stage of development which should have been outgrown before entrance into a university medical school. Be that as it may, there is no doubt of the demand, and it emanates especially from the best prepared and most able students. Prior to the introduction of recitations as a general feature of the curriculum—they had to be sure been held in some of the courses for many years—a system of private quizzes had developed, the large attendance upon which attested the need felt by the students for such instruction. These quizzes were conducted by men of standing and ability; the larger ones were organized to teach in all the main subjects of the curriculum. The standards were high, the drill magnificent, and the discipline severe. It was a bold man who dared to "bluff," but it required heroism to confess that one did not know. They were an austere school in which men learned to work, to make the best showing they could, and above all to proffer no excuses,—what can excuse a doctor's mistake? Immense demands were made upon the time and energy of the pupil; minute detail, system and precision were insisted upon; the criticism, always severe, increased with one's performance, until at its height it was recognized as approval; praise was so rare that it seemed almost fame. And beneath it all was a spirit of generous interest on the part of the master in the welfare of his pupils, of comradeship, of humorous sympathy with our minor mishaps, and ready assistance and sound advice in the graver difficulties of our undergraduate life. Those of us who sat at the feet of *the* quiz-master have a warm and grateful memory of the strenuous hours spent with him who taught us much of our profession, but even more to learn and labor manfully.

But the aims of the quiz were thoroughly "practical," its avowed purpose to fit a man to succeed at his hospital examination. For the internate in a good hospital was then, and is, essential to complete an adequate preparation for the practice of medicine. That attained, a man might shape his career as he would and could; until then, strict attention to busines and no intellectual luxuries or indulgence of "theoretical" interests. These ideals and standards could not but be unacceptable to the faculty of a modern medical school, and were felt increasingly to be so when through the support of the University it became possible to increase the laboratories and develop satisfactory courses in the medical sciences. There thus inevitably developed an irreconcilable divergence in didactic principles and purpose between the official courses and the extra-mural teaching, and from the administrative standpoint it became impossible longer to tolerate a doubtful allegiance on the part of a considerable fraction of the student body. As the quiz system was a natural growth and evidently met a need of the students, Dean Lambert had the wisdom to introduce recitations extensively into the curriculum, and, these established, the quizzes rapidly declined and the school vindicated her control over the education of her undergraduates. Recitations continue today in lessened number, though perhaps their nature would be better understood if they were called conferences. They are informal, often voluntary on the part both of instructors and students, and serve primarily to stimulate interest and evoke discussion, rather than merely to test proficiency.

Of the changes of recent years, among the most gratifying has been the increase and development of the laboratories; and here, while individual initiative and private generosity have played a helpful rôle, the prime factor has been the constant and faithful support afforded these enterprises by the University. The evolution of Bacteriology, Clinical Pathology, Histology and Embryology from Pathology has been mentioned. The first is an active independent department; the second and third have been assigned respectively to Medicine and to Anatomy, where properly they belong. Of the newer laboratories, Biological Chemistry was first to be established, in 1898. It was followed at successively decreasing intervals by Pharmacology, Surgical Pathology, Internal Medicine, Dermatology, and Neurology; all of these now conduct advanced study and prosecute research to the limit of their means. Every available room, formerly used as department office or classroom, is now used for laboratory purposes; the corridor of the Vanderbilt Clinic has been built upon, and one laboratory, that of Surgery, has been perched upon the roof, where also animal houses have been installed. Finally, the Crocker Research Laboratory, located at the University, has inaugurated its activities by a radical and suggestive innovation in academic architecture; its building symbolizes thrift and austere efficiency, and is a fair promise of originality and wisdom in the program of collective research there in progress. Over and above the broadly planned investigations which this laboratory is conducting, its staff are rendering a most valuable and humane service to the sufferers from this terrible malady, to whom they are more and more coming to act in an advisory capacity as court of last appeal, saving them from exploitation and guiding them in the perplexity that is occasioned by the number and nature of treatments loudly and too often ill advisedly proclaimed as cures for their condition.

The improvement in the scientific branches has been accompanied by equal development in the clinical departments, made possible in medicine and surgery by the affiliation with the Presbyterian Hospital. It was a magnificent act for an institution of the rank and repute of this hospital to form such an agreement, to open its wards freely to students, and entrust the nomination of its staff to the University. The magnanimity of the Managers, aided by the generosity of one of their number, has afforded the school unusual facilities for both instruction and research, and has made possible the introduction of the clinical clerkship, the method of bedside instruction which is so valuable a tradition of English medicine.

In the specialties also great improvements are making. In the Vanderbilt Clinic, the departments of Dermatology, Laryngology and Neurology have been thoroughly modernized in the last two years. The attendance of patients at the last named has more than doubled this year, and a largely increased staff has been organized for their care and the study of their diseases. As yet the department is without hospital facilities, and its scientific work is all but totally dependent for support upon the self-sacrifice of the workers.

It will thus be seen that the Medical Department of Columbia has fully maintained its place and played no inconsiderable part in the medical progress of recent years. This period of active progress in medicine and the allied sciences has been no doubt largely dependent on the increasing knowledge and appreciation of German work in this country; but to regard it wholly as imitative is to overlook the vigorous labors of the past generation of our own teachers and investigators. By them the foundations were firmly laid, the difficult pioneer work in education accomplished, and the development of the present is in large part the result of their labors, the realization of their hopes. The movement for better education in medicine has become nation-wide, and in it many diverse currents have met, many classes of men coöperated: the organized medical profession through its Council on Education, the medical schools through their Association, and the State Boards of Licensure, to mention only the most important. Though these organizations naturally have had to deal largely with the standardization and technicalities of education, they have rendered an inestimable service in their support of scientific methods and in the elimination of inferior schools.

The great increase of public interest has supported and encouraged the progress of medicine, especially in the humanitarian activities, but has not operated wholly for good in educational and scientific matters. Historical perspective is not, perhaps, highly developed in America; and the still very general ignorance of the public of all that pertains to their bodies, coupled with the ineradicable conviction that science is essentially sensational, have introduced an element of excited expectation which has reacted upon the profession, first in some of its prominent institutions, later in some of its prominent members. It would be remarkable, indeed, if the example of "publicity" thus inaugurated should not be taken advantage of occasionally by the less worthy for purposes of mere advertising, just as the collation of information by educational boards for serious purposes has carried in its train the private questionnaire, for the most part pre-occupied with parerga and inessentials, its enquiries ranging from the victim's favorite text-book to the demeanor of the president in the presence of assistant professors. But though no wide movement can escape such exaggerations and aberrations, it is yet pleasant to live in an environment that they come not very near. To be a part of a school and of a university holding a continuity with the past through a long line of able predecessors and a tradition of worthy aims and service makes for sanity and balance, and inspires confidence to persevere in calm and dignified ways of learning and inquiry. For we have a goodly heritage.

H. von W. Schulte

# THE TEACHING OF POETRY

## I

IT is the love of poetry, one may suppose, that destined at least a few of us to be teachers of literature. At some critical moment of childhood or youth we may have taken down from the shelves of the library at home what seemed a chance volume—but it was our fate in our hands. We opened at random at that sparse distribution of type down the center of the page which we knew signified verse. What good angel bade us read? A cadence, an image, a line—and poetry was born in us, the singing heart, the divine homesickness and the growing wings, the enchanted madness, sudden and beautiful and incurable beyond other kinds of falling in love.

For me poetry began with three and a half lines from the "Idyls of the King." So vivid was the experience that I still see just where the words stood on the page, and just how the afternoon sun streamed through the window, and how the old green-bound copy of Tennyson was transfigured as I read—

> "Long stood Sir Bedivere
> Revolving many memories, till the hull
> Looked one black dot against the verge of dawn,
> And on the mere the wailing died away."

My father came into the room, I remember, and I read out the lines to him. He agreed that they were admirable, but to my surprise he did not find them momentous.

Or if no verses awakened us, perhaps some heaven-sent teacher brought to mind our heritage in Tennyson or Shelley, in Wordsworth or Milton, in Keats or Spenser; heaven-sent he seems to us now, though his pedagogy was nothing more than drawing aside the forgetfulness that veiled our better selves from us, and his "insights," as we called them, into the masters were but naming over the things we too in a groping way liked best. He did not introduce, he restored us, to poetry. And other beginnings in poetry—

secondary beginnings, they might be called—we owe to teachers of literature in school and college, whose chance or intended allusions to vital things in books and to ideal things in life lighted up beauty by the way. To give a list of such allusions would furnish no clue to their importance, for even at the time they seemed casual, and memory holds them without much contact or relation to each other; but they made poetry more intelligible and more lovable. I think, for example, of a lecture in my freshman year in which a comparison was made between Lowell and Matthew Arnold. One poet-critic, I forget which, was the subject of the lecture, and the other was brought in, perhaps on the moment's inspiration, for a natural contrast between English and American contemporaries; but it was the contrast, however incidental, that won my affection for both writers. I think also of a lecture on Shelley and one on Milton, in which the splendid reading of well-chosen passages made the poets live. Such moments of dawn or starlight never cease altogether for the poetry lover, though the glamour is on the earliest. Gratitude prefers not to discriminate among them. Should I be more grateful to that Lowell-Arnold talk, which came first, or to some wonderful lectures on Virgil, which I can hardly expect to hear bettered? Did I gain more from reading those lines in the "Passing of Arthur," which were for me the doorway to poetry, or from reading Plato's "Symposium," which was more than the doorway?

The desire to teach poetry then, as I understand it, is the desire to provide others with just such new-births into the world of imagination as we have received from books and from instructors. Teaching poetry, in this sense, is not teaching meter or verse forms, nor even teaching the subject-matter of poems; it is the multiplying of those fortunate moments when the soul is dilated and the universe enlarged. We may conclude that graduate students have in mind a failure to provide such moments for them when they complain, as they sometimes do, that the course leading to the doctorate does not lead them to poetry.

But when we start out to teach poetry in our own enlightened way, we soon fall into a suspicion that it cannot be taught at all. We begin with an exuberant purpose to reproduce our good fortune in the lives of others, to give them the books that helped us, and to imitate for their benefit the inspiring insights of our masters; but somehow the magic illusion does not get created. We call the attention of our students to the passage from Tennyson which first was poetry to us, but our students see nothing in it but Tennyson; and as for imitating our former teachers, even our colleagues look at us with pity when we try to explain the secret of the priceless instruction we once sat under. In a dark moment we recall that many of our classmates came away from that lecture on Lowell-Arnold, or from that on Virgil, untouched by any gleam. These ministrations, we come to fear, are like other service of the spirit, too personal, too much indebted to the place and the hour, for any one to make them his profession. We may in a sense teach literature, but not poetry, we fear. We may lecture on the contributing circumstances of literary production, on the language, on the lives of the authors; but for poetry, we fear, for the spark from heaven, the student like the scholar gypsy must wait, and we half agree with the scholar gypsy that he had better wait outside our class.

We are not likely to agree on any advice for teaching poetry until we have disposed of this primary discouragement. Yet though the discouragement is so general, we ought to dispose of it easily. For we know there are many successful teachers of poetry; almost every college has one at some time or other—usually all the time. Though most of us found our first love of poetry in a book, it was probably an inspiring teacher who gave us our second love of it, and sent us to the university. If only a rare man could be found whose pupils became poetry lovers, we might well call him a genius, and give up hope; but since there are a number of such teachers, why should we think their equipment or their success beyond our imitation? The cause of our discouragement is that we try to reproduce for our students the exact conditions of our own initiation; we would have them admire the same passages in the same poems, and we even attempt to repeat the mannerisms and the very words of our teachers. But allowing for every variation of temperament in teachers and students, and for the accidents of time and of locality, we may yet hope to teach poetry without a too terrifying dependence on the spark from heaven. To a certain extent we may even cultivate those apparently magical insights into literature. Very simply, we may observe and imitate what the successful teachers of poetry have in common. What is their purpose in teaching poetry? What peculiarities are discoverable in their equipment?

## II

The office of the teacher of poetry is easily defined; it is to afford a mediation between great poets and their audience. For the most part the poets addressed themselves to their contemporaries without suspecting they would ever need interpretation. Certain youthful ones, like the Spenser of the "Shepherd's Calendar," may have annotated their works in advance, but there is no evidence that even they looked forward with pleasure to being lectured on by college professors. Yet even for the most direct poets time has gradually obscured the meaning, by changing the language or by dropping out some of the environment which made the book pertinent. With every year a gulf widens between the book and its reader. The office of the teacher of literature, then, is to supply the information, the background, whatever is lacking to make the reader at home with the book.

But if we are to explain any of the past, we shall need to know all of it, at least as much as possible; we must draw on more than one kind of record, on history and philosophy as well as on fiction and imaginative writing. Perhaps even so we shall not be able to recover the past; but if the whole record is not sufficient, a part of it certainly will not be. It is no accident that the successful teachers of literature have usually been students of philosophy or of history or of both, and if we wish to imitate them, our first step must be to broaden our definition of literature until it includes not only poetry and the novel, essays and drama, but also the masterpieces of biography and other forms of history, of philosophy, and of science. If such a counsel of indiscrimination is surprising, we should observe that here is no advice to teach history or to teach philosophy; it may be plain in a moment that such services are quite distinct from teaching poetry. The advice is rather to consider all masterpieces of expression as literature, as poetry if you wish—capable of giving us that new birth of the imagination which we defined as the experience of poetry—whether they happen to deal with an emotional dream, or with the annals of a nation, or with abstract enquiry. If even in this form the advice is puzzling, it is so only because we are students of English literature. We inherit the unenviable distinction of having put poetry off into a corner, and of treating with contempt those other and inseparable records on which poetry often depends. No such advice would surprise us were we students of Greek literature, nor would the advice be needed; for the classical scholar, so far as I know, has never omitted Aristotle or Plato or Thucydides or Herodotus from his canon of literature, any more than the French student has omitted Descartes or Rousseau or Voltaire. Both the classical and the French students, therefore, have the advantage of studying, along with poetry, a body of facts and a body of ideas which often determine the inspiration of poems. In teaching English we do sometimes talk of the ideas of evolution in "In Memoriam," but we ignore those predecessors of Darwin whom Tennyson studied, and Darwin himself, of course, we do not read. If it be urged that he did not write with felicity, and therefore deserves to be counted out of literature, what shall be said of Hobbes and Locke, of Berkeley and Hume, or how shall we dispose of such a historian as Gibbon? The offerings in college courses would indicate that these writers are none of them considered germane to the study of literature, let alone the study of poetry.

The narrow definition of poetry which excludes prose, and the narrow definition of literature which excludes history and philosophy, are in a sense novelties with us. When Sidney defended poetry, he understood within the term the parables of Christ and the dialogues of Plato; of verse writing by itself he said little. When Milton wrote of his ambition to be a poet, it was metrical composition that he had in mind, but his definition did not preclude the most austere of philosophic subjects. Shelley in his beautiful essay, itself a poem, resumed Sidney's large outlook, and wrote of poetry as of a way of apprehending all phases of life, even in prose. We may say broadly that the sixteenth, the seventeenth and the eighteenth centuries in England defined poetry as the French or the classical reader would define it, and that even in the nineteenth century large-natured critics who had the best of their training from the century before, took this just view of literature. But with the romantic movement came an emphasis upon feeling as opposed to thought, and therefore on the literature of the emotions as opposed to the literature of reason. To the exponents of this school it does not seem to have occurred that reason can itself be the object of passion, or the cause of it; the mathematical conceptions of a Newton were relegated by the new literary taste to the limbo of "cold thought," whereas a primrose by a river's brim became the occasion for poetic temperature and the summons to poetic meditation.

The formal doctrine that only those books are literature which have to do somewhat exclusively with the emotions, was set forth in De Quincey's half forgotten yet too well known letter on the literature of knowledge and the literature of power. Knowledge was once thought to be power, but De Quincey did not think so. "The antithesis of literature," he says, "is books of knowledge. . . . All that is literature seeks to communicate power; all that is not literature, to communicate knowledge." What does he mean by power? Power is the awakening in us of emotional aptitudes or forces which we were not previously aware of,—a definition wide enough to be harmless, except that the romanticist could not imagine his heart so fluttered by an accession of knowledge. "If it be asked," he says, "what is meant by communicating power, I in my turn would ask by what name a man would designate the case in which I should be made to feel vividly, and with a vital consciousness, emotions which ordinary life rarely or never supplies occasion for exciting, and which had previously lain unawakened and hardly within the dawn of consciousness." Those books, then, which stir the emotion and dilate the imagination—books like "The English Mail Coach"—belong to literature; whereas books like Gibbon's history, since they supply us with knowledge rather than with emotion, are not literature, but the antithesis of it.

It is hardly worth the time to argue with De Quincey, who nowadays has become the mere shell of an author, a stylistic ghost. His theory in itself might even be considered unobjectionable, so long as it is not applied to any particular book. But unfortunately his point of view has prevailed, to the harm of our teaching of literature. In many colleges to this day the formula survives that the nineteenth century was a well of true poetry, whereas the eighteenth century was an arid discipline of rhetoric,—that the English imagination slept fitfully through a nightmare of suffocation in Dryden, Pope and Gray, and awoke with deep breaths of gratitude for being alive in Wordsworth and Coleridge, even in Leigh Hunt. The eighteenth century has become a mystic term of reproach, which like some other mystic things, will not bear looking into. If we are thoroughgoing romanticists we remove from the century any writers who do not illustrate our conception of it. "The eighteenth century," we say "was a period of rhetoric and cold facts, wherein poetry and imagination were dead. William Collins, however, Chatterton, Blake, Burns, Thomson, and Cowper, really belong to the nineteenth century. It is only by an accident also that Addison's discussion of 'Paradise Lost' and Warton's 'Observations on the Faerie Queene' appeared when they did. We know this is so, because the eighteenth century did not care for imaginative poetry." If we are fond of Wordsworth, it is with reluctance that we admit he owed something to Pope. If we admit any merit in Pope, we probably concede it to "The Rape of the Lock," a poem which could have taught Wordsworth little; but we balk at the "Essay on Man," which is not more didactic than "The Excursion," and certainly is clearer and shorter. We may be persuaded to approve even the "Essay on Man," but beyond this we absolutely will not go; here we take our stand on the last perilous edge of literature; we will not drop into the chasm of knowledge. The invitation comes to us in the suggestion that for the ideas of his essay Pope drew on Shaftesbury and Bolingbroke, and indirectly on Leibnitz; and to read those gentlemen might help us to understand the essay. But why understand it any better? We reflect that we are far enough away from poetry as it is.

Perhaps it is time for me to say that I hold no special brief for Pope or for the eighteenth century, nor do I fail to admire the greatness of the romantic poets. What the lover of poetry must hold a brief for is the fact that each generation gets its poetic thrill out of slightly different images and suggestions, and it is impertinent for any age to conclude that its particular way of enjoying poetry is the only right one. If I found poetry first in a bit of romantic suggestion in Tennyson, naturally I am not the less grateful to the romantic method. But other people have made their discovery of poetry in such lines of Pope's as

> "Act well your part; there all the honor lies,"

or even in passages still more practical and informing. If we are to teach all of poetry rather than some particular school, we must recognize that those insights, those enlarged moments of the soul, which we agreed it is the object of poetry to impart, can be found by different readers in different authors. With that variety of taste it would be useless as well as impertinent to interfere. Falling in love, in poetry as elsewhere, is an invariable experience, universally understood; but as to the object which caused the excitement, there is no need to agree.

On this general ground we might well plead that the more intellectual kinds of writing should be restored to our definition of poetry. But there is also a special reason, which even the most romantic teachers of poetry now admit. The tendency to neglect as unpoetic all writers who are given to vigorous intellectual processes, who really think, and to praise exclusively those who appeal to our emotions, has largely destroyed the ability to read. A serious poet to-day, with an idea as well as an emotion, faces a hospitable but incapacitated audience. It has become almost an unfair question to ask poetry lovers just what their favorite poems mean, for poetry, by romantic definition and by assiduous practice, has become an emotional experience without coherent meaning. The ill effects of such a definition have been progressive. Those who refused to grapple with the not very profound argument of Pope soon found it inconvenient to follow the argument in Wordsworth or in Tennyson or in Browning. A few years ago a stand was made against this increasing reluctance to know what poetry specifically means, and now a wholesome reaction is well started, but for the moment there was much bandying about of the phrase "teaching ideas in literature," as though to stress ideas were to inject a foreign or novel element into literature. All that the phrase actually stood for was a return of the sane conviction that, provided one cares deeply for the things of the intellect, ideas are proper subjects for emotion and therefore for poetry, and that those writers who express intelligible ideas should be intelligently appreciated, over and above whatever emotional power their art may afford. The reaction is now so far advanced that we need not forfeit our reputation as lovers of poetry if we insist on knowing just what Shelley means in certain portions, let us say, of the

"Prometheus Unbound," or of the "Epipsychidion"; nor are we lost if we conclude that Shelley did not always know what he meant. We need not be deaf to his superb music; we need not deny that for those moods which are satisfied by pure music he is always adequate; nor need we be blind to the noble intellectual designs that often do clarify his profuse emotion. We need but to discriminate honestly between his merits and his shortcomings, between his moments of thought and his moments of feeling; so shall we deserve the confidence of those willing students who try to like him, since he is a famous poet, but who cannot see at all times what his poetry is about.

## III

As soon as we have convinced ourselves that our definition of literature should include history and philosophy, there is danger that we may become teachers of history or teachers of philosophy, rather than teachers of literature. We are most likely to become historians. There is of course no objection to teaching history; the only question is whether by so doing we are not departing from our first ambition to confer on others our love of poetry. We should observe that the teaching of literature as history differs radically from the use of history to understand literature. It is true, of course, that poetry is a record of thoughts and feelings, and that we may try, if we wish, to trace the development of culture in English poetry from Beowulf to Blake. But there are grave difficulties in the way, and even if the performance were easy, there would be nothing in it to make one necessarily a lover of poetry, any more than Gibbon's masterly summarizing of theological creeds would make converts to them. And even from the historical point of view, poetry is dangerous material from which to recover the visage of the past. In proportion to the completeness with which it reflects life, it is a mirror for every age to see itself in, but we do not look into mirrors to see the person who was there before us. The great poets capture a whole field of vision, though focusing on only a part of it; we can find in the picture, as we can find in life, many details that never interested them. In this inclusiveness the poet, unlike the philosopher or the historian, is often more profound than he intended to be. Reflecting on this fact, we may be chary of ascribing to any poet, or to his age, the things in his works that are precious to us. Nothing in recent years, for example, has probably been more satisfying to lovers of poetry than the revival of interest in Euripides among English readers—a revival brought about largely by the genius and the enthusiasm of Professor Gilbert Murray. But along with this appreciation of the noble poetry, perhaps finally to undermine that appreciation, if we only knew, has gone much emphasis upon the modern note in Euripides—upon his foreknowledge of the problems that distress our age. Beyond question it is possible to quote from him passages strangely apposite to contemporary themes, yet it does not follow that he had any more understanding of our times than other poets equally great, or that his message is more intimate for us than it was for men a hundred years ago. It is Professor Murray who belongs to our age; to say that Euripides is modern may well be only an awkward and misleading way of registering his immortality, his capacity for being interpreted to any age. Though we can find our thoughts expressed in him, we hardly need to revise our notion of the Greeks, so as to attribute our thoughts to them. In some cases the contemporary note is palpable luck. When the old nurse, trying to persuade Hippolytus to love Phaedra, remarks that Aphrodite is a beautiful goddess, universally worshiped among men, the youth, who is devoted to Artemis, answers that what god one worships is a matter of taste. Does the reply sound sophisticated, disillusioned? Perhaps it is so to readers at least tentatively monotheistic, but nothing could be more sensibly pious on the lips of a youth like Hippolytus, who had a number of gods to choose from.

If poetry has the faculty of reflecting various meanings, of expressing the reader quite as much as it expresses the writer, and if for that reason it is dangerous material with which to teach history, for the same reason it is an unsafe vehicle for the teaching of philosophy. Here also we should observe that the teaching of literature as philosophy differs radically from the use of philosophy to understand literature. When we would appreciate the "Essay on Man," there is an advantage in knowing Shaftsbury and Bolingbroke, just as there is an advantage in knowing the early theories of evolution when we would read "In Memoriam"; if it was an idea that stirred the poet's emotion, perhaps we must understand the idea before the same emotion will be stirred in us. But there is a world of difference between emotional contact with an idea and philosophic control of it. Certain ideas, the denial of the old-fashioned kind of immortality, for example, produced a momentous effect on Tennyson, leaving him perplexed and wrought; in time he got used to his perplexities, without solving any of them, and he had the genius to give us a faithful record of his doubts, just as they beset him, and a faithful record of his getting used to them. There may be a philosophy in the writers he had been reading, who produced this effect on him, but there is no philosophy in "In Memoriam," no system of thought, only a series of emotional reactions to ideas. Those indefatigable commentators who still approach the poem in the faith that Tennyson, being a good poet, ought to have a sound theology, are sore put to it to furnish him out of their own philosophies with even a patched-up and dubitable system. Desiring to get a precise translation of what the poet by his own account only vaguely felt, they must wrangle forever as to just what was intended by "Strong son of God, immortal love," at one end of the poem, or by "One far off divine event," at the other. The question would be a fair one to ask of a philosopher, but it is an unfair one to ask of a poet who for the moment records not ideas but the distress produced by them. Even when the poet is intentionally philosophical, as Pope is in his Essay, or—to take a great example at once—as Lucretius is in his epic of nature, there is something more permanent in him than the philosophy; there is what we call poetry, that kindling of the heart and the imagination which philosophy may be the cause of, but which is not philosophy. It is to this that we first gave our devotion, and it is this we desire to teach.

We cannot make the distinction too clear. Instead of teaching poetry as though it were history or as though it were philosophy, we need to draw on history and philosophy in order to understand poetry. History is a large word. It means all that is necessary for us to know before we can be contemporary with a poem. To read Chaucer with every advantage, we must recover as far as possible the frame of mind which the men of his time brought to their acquaintance with his work. We must know their language, their political, social and other opinions, their attitude toward life and toward poetry in general, and their prejudice for or against the poet. All the scholarship needed for this recovery of Chaucer's time may be conceived of as history, whether it involves learning biographical facts or learning a language. Study of this kind is the only magic to change us into a contemporary of any remote writer, if that be at all possible. We often think the change costs more than it is worth; we are especially rebellious when a language has to be mastered, merely to read a poet whom we may not care for, after all. So unpopular has language study become, that the entire moral responsibility for it will shortly rest on heartless graduate faculties. But this ought not to surprise us in an era when it has been considered no handicap to a reader not to know just what his favorite poet means. For many of us, of course, philology in the narrow sense may never prove alluring; at most it may be for us only a limited approach to poetry. But some knowledge of language is obligatory if we are to make any comparative study of literature, whether we compare the poets of our own race in different centuries, or the poets of different races in our own time; and we would probably admit that without some comparison of poetry the teaching of it can hardly get far. The summons to be contemporary, to study the poetry of our own time and our own country, is a gallant encouragement to be self-reliant, to stand on our feet, as Emerson and Whitman invited us to do. Besides, the invitation excuses us from learning Anglo-Saxon, or German, or French, or Latin or Greek. Yet what an unimaginative love of poetry that would be, which could be satisfied to rest in one time or in one place! Whoever got his first love of poetry from a strictly contemporary poem? It was the quickening of imagination in us that made the experience poetic, and imagination rarely gets its first quickening from what is close at hand. Whether we read back into time, or crosswise into foreign literature of our own day, some arduous study of language, of all that we have called history, and some effort of imagination, must be undertaken before we are neighbor to the poet whose works we hope to understand.

If the historical approach to literature is unpopular, perhaps the teachers of literature are themselves to blame. It is so easy to teach history instead of poetry; it is so natural to assume that these historical matters on which we spend so much study have to do, not only with the approach to poetry, but also with poetry itself. The whole service of history, however, is but to make us contemporary with the author. Once become contemporary, we are in no better position than any other readers who are about to make the acquaintance of a new poem. When we are finally at home in Chaucer's age, we face there the same problems of appreciation and criticism as we face when we read verse in the morning paper. Does the poem thrill us? Why? Is it a good poem? Why? The study of history merely postpones these elementary questions; it never can answer them. The fact that Chaucer derived his plots from Boccaccio or from some one else, and the fact that his language evolved largely from the Anglo-Saxon or is recruited from the French, can have no bearing on the value of his work as poetry. No matter how far scholarship retreats into history, it is still backing away from those simple questions that baffled the critics of "Fannie's First Play."

The young lover of poetry, recalling that he found his first beautiful experience in some lines the author and the date of which he perhaps did not know, is naturally wary of the unconscious tendency to substitute historical information for literary insight. He observes that the purely historical approach is helpless in dealing with a poem just written,—worse than helpless, for it often tries to operate blithely where there is no history. I once heard a great philologian tell a young poet that his lyric just published in a magazine was one of the most admirable poems in American literature. The happy author asked wherein this excellence had been noticed, and the scholar replied with enthusiasm that every word in the lyric was of Anglo-Saxon origin. I still see the look on the poet's face. Only a few months ago we were reading a description of a well known school of English teaching. The description was seriously intended and entirely laudatory; it set forth an ideal. "In its literary studies," we read, this school "aims to get at the bottom of things, to explain relations, to trace an author in his borrowings, to lay bare the influence under which he wrote. To mere esthetic evaluation" it turns "a deaf ear." In other words, the merit of this way of teaching literature is that it attends exclusively to the historical approach, and resolutely declines to consider what the poet and his readers are primarily interested in—the effect produced by the poem itself. It is a natural and fortunate instinct of the student, who still remembers his genuine contacts with poetry, to protect himself against this theory of teaching. Unhappily the student often protects himself too much, failing to see the immense importance of historical investigation properly employed, as a means of becoming contemporary with old poets.

When the historian stands helpless at last before the poem itself, the philosopher comes to his rescue. To criticize a poem written yesterday or this morning, one needs not a record but a theory of life. We pass judgment immediately on our neighbor's actions, on his thoughts and emotions, without going into his biography. An account of his life might indeed affect our opinion of his morals or his motives, but his acts themselves we judge by our own scale of values. Poetry, a reflection of action or thought or feeling, is judged in no other way. The equipment of the best teachers of literature is principally this, that by experience or study they have arrived at a coherent philosophy of life, and have therefore an instrument with which to take hold of new emotions and new thoughts. It makes little difference what our philosophy is, so long as it is sincere and thorough; of course, the more it explains of life and letters, the better it is, but the desirable thing is to have some philosophy. If we can organize our teaching of literature so that our students will come in contact with historical and philosophical masterpieces, we may hope that they will feel not too far estranged from the atmosphere that surrounds the older poets, and that, once become contemporary with all poets, they will formulate a consistent chart of life by which to orient themselves in all poetry, even in that written today.

## IV

The service that philosophy renders in giving insights into poetry is so simple that it needs no elaborate illustration. Yet I should like to suggest a few illustrations, if for no other reason, because I have come to believe that the magical "insights" we admired in our former teachers can be acquired by anyone who will first get, what they had, a sound theory of life. We shall probably get no help from books on esthetics, though it is to them that the literary man would naturally turn; rather we may expect to find inspiration in those discussions which are not of art but of life. "Only a long and still unfinished education," says the philosopher, "has taught men to separate emotions from things and ideas from their objects." That is, the door which shuts on the child's finger seems to the child unkind; and it is only a very mature person indeed who realizes the impartiality of nature. This idea inspired Ruskin's theory of the pathetic fallacy, in "Modern Painters," but clearness was not always his quality, and in this case we have difficulty in learning a critical method from him. "The greatest poets," he says, "rarely fall into the pathetic fallacy." As a matter of fact they do employ it, and with a sound discrimination. If they wish to represent an emotional state which has imposed itself on nature, they give us the fallacy, but if they wish to represent a clear mind, unclouded by emotion, they show nature as it is, uncolored and impersonal. Ruskin quotes for condemnation Kingsley's "Sands of Dee"—

> "They rowed her in across the rolling foam,
> The cruel, crawling foam."

The foam is not cruel, he says, nor does it crawl. But probably it seemed cruel to the sorrow-stricken survivors in the poem. Kingsley's mistake was to put these epithets in the mouth of the poet who tells the story, and who, standing outside of the tragedy, is not sufficiently carried away by it to utter them with conviction. Other poets have frequently got a fine effect by contrasting an object in nature as the emotional person sees it, with the same object as it looks to the dispassionate bystander. Lafcadio Hearn pointed out this effect in the famous close of "Bingen on the Rhine," where the impartial moon shines with the same loveliness on the dead face in Algiers as on the bereaved home in Germany. With the principle of this criticism in mind, we perhaps observe a confusion in a recent beautiful poem by Mr. Conrad Aiken. He tells of a mystic lover who walked by the seashore, wooing the stars. To the lover, nature becomes the incarnation of his passion, and he yearns to be one with it. In the morning the waves are washing his dead body to and fro.

> "Who shall declare what hurt they did,
> What murder among the rocks they hid?
> Cruel and beautiful they came,
> And offered, without pride or shame,
> The naked body, gashed and white,
> Of him who wooed the stars that night."

The waves are "without pride or shame"; they are nature seen without illusion. To apply the epithet "cruel" to them was, it seems, somewhat contradictory and misleading.

Or to take a more striking illustration of philosophy's aid toward insight into poetry. The philosopher raises the question whether men are remembered because they are great, or are great because they are remembered. Must there be a certain picturesqueness, a susceptibility to fame, before one can be famous? Does the mind refuse to dwell on one aspect of life, preferring another? With the question in mind we turn to Keats's wonderful "Ode on a Grecian Urn." His theme is the eternity of beautiful moments. Most readers would say that he illustrates his point by the two scenes painted on the urn. On one side is a shepherd piping, a lover pursuing a maiden. The picture is immortal—

> "Fair youth, beneath the trees, thou canst not leave
> Thy song, nor ever can those leaves be bare;
> Bold Lover, never, never canst thou kiss
> Though winning near the goal—yet, do not grieve;
> She cannot fade, though thou have not thy bliss,
> For ever wilt thou love, and she be fair!"

On the other side of the urn is painted a heifer led to sacrifice. Is this picture to be immortal? Shall we contemplate forever the priest about to slaughter the victim? With the poetic tact in which he has no superior, Keats turns rather to a scene not represented on the urn—

> "What little town by river or sea shore
> Or mountain-built with peaceful citadel,
> Is emptied of its folk, this pious morn?
> And, little town, thy streets for evermore
> Will silent be; and not a soul to tell
> Why thou art desolate, can e'er return."

## V

If our teaching of poetry begins from our delight in it, if we are not unwilling to read widely in the whole experience of the race, if we can recover from history something of the past and can learn from philosophy to understand the present, what shall we add to our counsel of perfection? Only this—to be still as we were at the beginning, lovers of poetry. It was from the example of our teachers that we learned most. Together with the historian and the scientist they felt the lure of scholarship, but we looked to our teachers of poetry not for scholarship alone. If we are to give our own students what they look for, we must keep fresh in ourselves, as we grow older, a capacity for that poetic experience which lighted our youth. No human task is easier or more beautiful. Or is it a task, or only a happy way of life? Plato described it for us. "Wise men are not philosophers," said the prophetess, "for they already have wisdom; and ignorant men are not philospohers, for being ignorant they do not know their need of wisdom." "Who then are philosophers?" cried Socrates. "Those intermediate persons among whom is Love."

JOHN ERSKINE.

# THE RELATION OF EDUCATIONAL TRAINING TO THE PRACTICE OF ENGINEERING*

THE educational training of engineers has developed with great rapidity during the past fifty years, and the varieties of that training have become almost as numerous as the individuals who have had the controlling influence in shaping the various courses of engineering study throughout the country. In the early days of some of the older and more prominent curricula this educational training was largely of an abstract scientific character, formulated without much regard to the actual work performed by engineers in the practice of their profession, but including effectively the broad general principles underlying what may be termed, for a better expression, engineering science. It is probable that Rankine's Applied Mechanics is the most representative and best adapted book ever used in English-speaking countries in the early engineering schools. The instruction given in such courses of study was not emphasized and enforced by as many practical applications in the shape of suitable problems as would now be considered necessary for effective educational work. Yet nearly all the essential principles employed in the most varied engineering practice of the present day were thoroughly grounded in the minds of the students at that time. It is a fact, moreover, that no branch of the engineering profession has ever had more luster shed upon it than by the professional practice of eminent engineers during the past fifty years whose early educational training was characterized by such intense and unadulterated theory.

Manifestly the results of those remarkable advances in science which form essentially the basis of the great specialties of electrical and mechanical engineering, especially in the most advanced development and application of power, were not included in the early educational training in engineering theory. It is a rather remarkable fact, however, that the so-called theoretical training proved on the whole apparently as effective preparation for professional practice as the far more vocational training of the present time. Furthermore, it is highly significant, if not even more remarkable, that in Great Britain, where for many years the system of apprenticeship was considered absolutely essential for the preparation of a young engineer in beginning his professional work, this intensely practical system has already largely yielded to the training of the engineering school. In fact, during the past half dozen years the Institution of Civil Engineers has taken up this question by committee action for the purpose of determining as far as possible what is the best procedure for the prospective young engineer to acquire his educational training. While there has naturally been a great variety of opinion expressed in these investigations, it may be justly stated that the whole trend of the best English engineering judgment is in the direction of a thorough educational training, including the acquisition of those species of knowledge available to the engineering profession in all branches of science into which the most advanced research has penetrated, and which may be grouped under the general head of engineering science.

---

* From an address presented at a regular monthly meeting of The Engineers' Society of Western Pennsylvania and published in its February, 1915, *Proceedings,* pages 56–74.

As far as this movement has proceeded in Great Britain it is simply parallel to and abreast of the general principles which have governed the education of engineers in this country from the first. The training of young men for the profession of engineering in Great Britain has probably not lost much if any of its really practical characteristics, but there has been a gradual readjustment so as to increase, and give to a considerable extent at least a prior position in time, to the educational training. In fact, in America, even before the present vocational trend had become so marked, the importance of an early touch with the actual affairs of the profession was never underestimated. The first two or three years of the practical work of the young American engineer has not been materially different from the best apprenticeship or other similar work of the young English engineer; but it has not been distinctly segregated or named, and he has received a small compensation commensurate with his usefulness.

All this, it may be stated, is true enough, but quite general, and not significant as to any special relation between the educational training of an engineer and his subsequent professional work; but that statement is based on a superficial view. A little careful analysis of the actual facts disclosed by the past, not only in this country but abroad, will show results as interesting as significant. The oldest engineering school in this country, forty years ago or more, administered a curriculum in which the only attempt to do practical engineering work throughout its four years was a limited amount of surveying. Its educational training included a thorough analytic or scientific treatment of hydraulics, an equally thorough analytic treatment of earth pressure and its applications to such structures as retaining walls and arches, a comprehensive mathematical treatment of the elasticity and resistance of materials, a similar treatment of the theory of bridges and girders extended in that field of instruction so far as it had been developed, the subject of railroads and railroad structures, a thoroughly mathematical treatment of astronomy, including its aplications to geodesy so far as engineering work required, an intensely mathematical treatment of heat and heat engines, of which, of course, the steam engine was the prominent prime mover, a similar treatment of all varieties of water wheels and hydraulic engines, and a modest general course in physics, as well as a reasonable amount of chemistry, with thorough courses in calculus and analytic mechanics, as the bases of the course in engineering structures and motors; but all this was practically without any vocational coloring whatever. A similar observation could be made in regard to other courses of engineering study existing in this country at that time. The important fact about all this purely theoretical educational training, whose significance seems to be absolutely lost at the present time, is that in spite of all the purely mathematical and theoretical work which was done in the engineering schools in that early day, to the exclusion of practically all vocational features, they turned out engineers who adapted themselves alertly to every advance in engineering science, and in all science, and who developed the practical operations of their professional work by the aid of those advances promptly and effectively to such an extent that their professional attainments have not been excelled in effectiveness, in economy, nor in any other respect by the later products of the engineering schools. It would be invidious and offensive, probably, to mention names, although they could easily be spoken. These engineers, as is evidenced by the construction and administration of great railroad lines, great bridges, water works and other public works, and by the manufacture and application of power, not only had the capacity to develop the purely technical side of all their operations, but in many instances exhibited extraordinary administrative capacity. In other words, in their professional operations, where they have had extended or broad responsibilities, they have shown capacity for organization and the executive quality to an extent not even now often associated with professional talent. Yet in no small respect, even, has the technical work of these men been found defective. Indeed, some of the best technical developments known to the engineering profession in this country have been accomplished in the organizations created and conducted by them. . . .

If a course of study is so constituted and administered as to present to the young engineer the fundamental principles underlying the problems with which he has to deal and their general relations to each other, as well as to other parts of the engineering field, as were the earlier curricula, he will be stimulated to broader views and activities which are suggestive, at least, towards acquiring executive or administrative capacity. Such a man has a training which awakens vision or imagination prompting him to initiative and self-reliance, qualities of the strongest personalities. On the other hand, a course of study composed largely of extended applications of practical method to details and to the treatment of those more or less narrow matters belonging chiefly to a specialty, particularly when combined with much drill in the manipulation and use of mechanical appliances, shuts out much opportunity to view the general features of any engineering project, either of itself or in its relations to other engineering matters. Such training in vocational details narrows and shortens one's horizon, atrophies the imagination and paralyzes initiative. Concentrated attention on detail method and manipulation is often an effective antidote to a virile grasp and control of broad fundamental principles.

Whatever else the earlier engineering education was, it certainly was not of this latter kind, and there is no reasonable doubt that its comprehensive fundamental character, in spite of what it lacked, stimulated in many who took it unusual professional strength. The older courses of engineering study were mostly classed as civil engineering, but these observations are applicable to the entire field of engineering education in this country up to a period closing perhaps twenty-five years ago. The striking lessons of that period are in grave danger of being lost in the contemplation of the rapid development of the engineering profession in the last quarter century. They should, however, not be undervalued, nor worse yet, overlooked. The progress of all branches of science, especially in the electrical field, has induced the evolution of engineering practice in special lines to an extent impossible to anticipate, and hardly credible before it actually took place. This is markedly the case in mechanical and electrical engineering. This rapid extension has created an increasing demand for engineers specially qualified to practice in those fields, although civil engineering has experienced a scarcely less wide extension. As a matter of fact, it is not only difficult but impossible to draw the line satisfactorily between civil engineering and the special fields which have been differentiated from it from time to time. It is the belief with some, if not many, in which I share, that the educational training of engineers has suffered in effectiveness in the haste to meet the demands of this rapid evolution of engineering practice.

If the course includes the establishing and the effective treatment of fundamental general principles underlying engineering science, combined with a well-balanced application to those actual practical things which are the objects of the engineer's activities in every field, whether of structures, machines and projects of the civil engineer, or in the development and application of steam, electrical or other power, of mechanical and electrical engineering, those young men who pursue such a course of study will have a wide and effective grasp of the technical basis. When this control of fundamental principles becomes tempered and directed in practical affairs by experience in the early years of their practice, they possess a highly valuable equipment of broad, suggestive training. They are truly educated for their profession, and not merely fitted to do a limited number of things with manipulative excellence in a narrow, and narrowing, specialty. The horizons of such men are so broadened and cleared as to enable them to view what they have to accomplish in correct proportion and in proper relation to the things around them. That is the lesson which it seems to me should be learned from the educational training of the past and applied to the development of the educational training of the present.

In the intense desire at the present time to meet the immediate demands of special lines of professional practice, there is an almost irresistible temptation to restrict or narrow educational work to meet the equally narrow special field in which the young engineer thinks he may find his life work. In other words, there is danger of giving a narrow vocational view to his educational preparation, although such a procedure in the professional school not only destroys its true educational influence but also greatly restricts the young man's effectiveness for his subsequent career. I do not mean by this to underestimate the value of true vocational training, but it seems to me that such a vocational view is fatally wrong. Let the training be vocational, if one likes the name; but let it be broadly and intelligently so. The vocational view of an engineer should be fundamentally as broad as the field of engineering. His true vocation should not be fundamentally that of a narrow specialist; but the practice in his ultimate field should be based upon an educational foundation extended enough to include all the general principles of engineering science. This is not impracticable nor chimerical. There are quarters in which it has always been done and is being done. Any practitioner in a special field is a broader and better specialist if his educational training has been based upon the fundamental general principles of engineering science. Any young engineer who concentrates a large part of his time on the manipulation of machines and appliances in the laboratory of the engineering school beyond what is necessary to give him a thorough knowledge and control of the principles of the processes involved and their application to practical affairs, has spent his time unwisely as a preparation for engineering practice and loses the acquisition of general technical knowledge to an extent that will seriously cripple him in his subsequent development. A professional man needs not only to be thoroughly familiar with things which he is doing, but also to possess an equally effective general knowledge of what others are doing in other parts of the engineering field, in order that he may avail himself of whatever may be of value to his own practice; and this observation is forcibly applicable to the specialist. He may be so absorbed in his own particular lines of work that he is in danger of completely losing sight of the relations of his work to developments that are constantly taking place in other parts of the general field, some of which at least may have important bearings on his own. The cure of this defective condition, and in most cases the only cure, is a broad educational training.

It is obvious that every field of engineering work furnishes opportunity to every variety of individuality, from those who by nature are qualified to work intensely along special lines to those who possess the executive capacity and temperament, and it is certainly clear that the best educational training should be such as to encourage, if not stimulate, the evolution of the individual in a way to make him professionally the most effective possible; but that is not the whole story. The engineering profession is now being considered and the part in it which the engineer is to take. To my mind, the responsibilities of the professional man as an individual in the community are not limited by the technical field in which he may achieve his principal work. He is, or ought to be, an aducated man; and the quality of his citizenship is to be regarded as scarcely second to his ability as a technical man. Education, like wealth, carries with it a peculiar and even a grave responsibility. He may not be, with impunity, a narrow almost one-ideaed technical being only, moved with a single idea to attain as nearly as possible engineering perfection, although that is well in its proper place. He should be as far as practicable a well-rounded and developed member of the community as well as one who has had effective training as an engineer. It seems to me clear that the broad general type of engineering education accomplishes this desirable end, in that it preserves a proper balance between the special technical results which the engineer must accomplish on the one hand and the acquisition of broader capacities which give him far wider influences in the world about him. No matter how much special technical knowledge a man may possess, if he lacks the qualification to make that capacity valuable in its results to the general affairs of the community as a whole, his intense special attainments will avail him little. In other words, the educational training of an engineer should be such as to fit him for the widest possible aplication of his knowledge both technically and as a useful citizen of the community.

It would appear from the intense specialization which already characterizes most of the engineering schools of the country that the great educational advantage of breadth, as well as depth, is not appreciated. This perhaps is natural, but it is also unfortunate; and it should be a grave question among educators in technical schools whether it is not best to correct the narrow influence of such specialization by a return to a more broadening and more effectively educating curriculum. It is certainly true that the character of the educational training will determine largely the character of the professional practice. If the training is narrow, shutting off the effective consideration of those wider principles which control collateral but affiliated fields of professional activity, the subsequent practitioner will necessarily be restricted in his operations to those things only with which he has been made familiar, and will have failed to acquire the capacity to make use of results in many collateral but valuable fields of activity. The unusually forceful individual will in many cases overcome such educational disadvantages; but his case is the exception and not the rule. If young engineers are to be fitted with an education qualifying them to attain to the broadest and best fields of practice, that training must be equally broad without losing thoroughness.

These considerations acquire, it seems to me, greatly added force in connection with the rapidly widening field in which the services of the professional engineer are required, if not even demanded. A civil engineer, a mechanical engineer, or an electrical engineer will be by far the most effective specialist if his education is broad enough to give him a well-rounded conception of all engineering affairs into which he may be brought in contact, or in connection with which he may have to consider the effects or influence of his own work. Again, it is the broadened horizon of his intelligence which gives him a more effective view of the real scope of his own work. This aspect of the educational training of engineers is one which has as yet received but a small part of the attention from the profession which its importance demands. In fact, it opens up to engineers of all fields a range of executive or administrative duties in which the responsibilities are only partly technical, but which belongs as thoroughly to the engineer as do his technical functions. This executive or administrative field of work includes some of the greatest responsibilities existing in the community and leads to the highest official positions, both in business and in public affairs. It covers all administrative positions found in connection with municipal and state public works, the discharge of executive functions required in the construction, maintenance and operation of steam railways, electric railways, hydro-electric power developments, and great organizations engaged in telegraph and telephone services. In fact, broadly speaking, the engineer is the proper administrative officer in every industrial corporate business serving in one way or another the public interests and involving the manufacture and transmission of power, or the building of structures, or the administration of an almost indefinite number of similar agencies. These fields have scarcely yet begun to be occupied by the engineer, but he is the individual above all others who is best fitted by his educational training and experience in affairs to undertake such service. . . .

It will be clear, however, that if the educational training of young engineers is to be such as to qualify them for professional evolution of this character, it must have a broad technical basis, and it must have more than that. If the duties of an engineer bring him into the administration of affairs, this means that he must constantly be brought into contact with his fellow citizens in the community. Under such circumstances he must have the power of gracefully and effectively communicating with them in such a way as to please and persuade them. He must have a reasonable command of language and such a faculty of presenting his propositions and his reasons for supporting them as will be persuasive and convincing. Furthermore, it is absolutely essential that he possess to a reasonable extent at least what is called cultivation, which consists of no mysterious qualities of individuality, but a wholesome and sympathetic regard for others; it is gracious common sense applied to the communication of men with each other, which also is little else than tact.

It may be contended in reason, I think, that such a fairly well-balanced and well-rounded man should have besides his technical educational training a prior general education such as may now be acquired in any good college; and this brings me to the recent movement in a number of the more prominent engineering schools of the country where the course of study in the professional school must be preceded by general educational work. At Columbia University all engineering students are now required to take three years in the college, or its equivalent, as a general educational basis for the subsequent three years of the engineering curriculum; and some other schools of engineering have taken the same step. This requires six years for the whole educational training of the enginer; but as it may be begun possibly at the age of sixteen, or certainly at the age of seventeen, the young engineer is ready to begin his professional experience at the age of twenty-two or twenty-three years, and that is not far from the ages of engineering graduates heretofore. There can be little or no doubt that such educational work will tend toward professional practice of excellent quality, whether along special lines or in administrative and executive positions. As a result of many years of experience both in instruction and in active practice it seems to me that such an educational basis must not only lead to improvement in practical results, but also quicken the sense of moral obligations and responsibilities in the discharge of administrative duties.

The importance of avoiding over-specializing in educational training is not likely to be exaggerated; for the temptation to commit the error is strong. General subjects in the curriculum, or those which are supposed to be not of immediate practical value, are either cut down to small proportions requiring superficial treatment, or they are avoided entirely in order to afford more time for the excessive development of those practical details which are supposed to be of more immediate use to the new graduate, *i. e.*, those which are supposed to be of more vocational value, or again, for excessively developed detail work in the laboratory. As has already been said, this narrowing and desiccation of the curriculum in order to give it a so-called vocational or practical character deprives it of its best educational value. Indeed, I think it may be said not unreasonably that the narrowly specialized student is not, truly speaking, thoroughly educated. He is not sufficiently well-rounded to be so classified. The narrow training is a mistake even from a mercenary point of view, for while such a mal-developed young engineer may possibly (or possibly not) have a little initial advantage the first year of practical work, his weak grasp of professional subjects and limited knowledge of them will be a serious handicap in his subsequent development; a man with a wider professional knowledge and consequently with a greater professional power will easily outstrip him in the end.

A highly specialized course of engineering study is by intention narrowed to a comparatively few subjects, including essentially more sub-divisions of a few subjects rather than a larger number of subjects less sub-divided. This again restricts the information acquired by the student to a corresponding narrow field, and by that narrowness he is prevented positively from acquiring a wide knowledge of general principles which would give him more extended power in his professional practice. The restriction leads to a correspondingly narrow field of activities, and the longer he works in it the more incapable he is of getting out of it. His horizon is too limited to enable him to take an effective view of the greater problems whose solution brings greater rewards. . . .

There are a considerable number of fundamental subjects which belong in all courses of engineering study and which seem to be of little direct value to the practitioner. Under the present vocational view of such matters these subjects should be curtailed as much as possible, or in some cases even omitted. The more mathematical subjects of the curriculum are of this class, and calculus probably receives more criticism of this character than any other. It was but a few weeks ago when one of the oldest and most successful civil engineers in New York City asked an engineering friend of mine if he had ever known in all his career of a single instance in which he had occasion to use calculus. When my friend told him that he had not found such an occasion, his questioner replied that neither had he in all his more than fifty years of engineering practice. This is apparently a hopeless verdict against calculus, but apparently only. Both professional men of whom I have spoken are alert and thorough analysts of engineering conditions found in connection with their special problems. While calculus has probably never been of the slightest direct or practical use to them or to many other practicing engineers, it has played a most important but unnoticed part in their educational efficiency. The analytic quality or power gained by training in such a subject as calculus in the direction of exact and skillful reasoning is great, but seldom if ever recognized by engineers in active practice. Educational factors of this sort are far-reaching in effect and of much real value; but they are not obtrusive or self-assertive. Their quiet influence in shaping and directing the operations of the mind along channels leading unerringly to the truth is of a kind which cannot be expressed in foot pounds of work or in watt hours, or in dollars and cents; but they are effective enough to contribute materially to professional success. Precisely the same observations may be applied to other fundamental and formative subjects in an effective curriculum of engineering study.

I must repeat that this criticism of intense specialization in engineering study is not in any sense or to any degree whatever a depreciation of the great special fields of work in engineering. The time has come when practically all professional men, engineers or others, must select, or be gravitated into by events beyond their control, special fields of activity. No engineer can possibly be qualified to practice successfully or creditably in two or more fields of work at the present time. The old general practitioner is gone never to return; he has been displaced by the specialist. But it is contended that the specialist should be given a broad educational training and that the main specialization shall take place subsequently to that training. He will thereby become a far better specialist than if his educational horizon were limited chiefly to the special things which he is to use in his subsequent career. That career is not one which he can follow unmindful of an intelligent appreciation of the things going on about him, and that appreciation can be acquired only when stimulated, if not created, by a breadth of educational training which will give him the power to discover the true relations of his own work to that in other branches of professional activity. If he has acquired effectively a thorough grounding in other branches of engineering science besides those with which his special activities are to be connected, his own work will possess a far better quality because it will square more truly with other engineering conditions in the community and be found correspondingly more useful, more valuable, and, if you please, more effective in financial returns.

There is a well-defined distinction between the well-rounded, widely intelligent specialist and one who has been so narrowly trained that he knows little else than the narrow field in which his activities lie. The former may be called the true expert, while the latter is indeed a narrow specialist. This distinction is positive and means much. It means that the broadly qualified specialist who realizes affairs about him in their true proportions is the safe professional adviser who frequently becomes the accomplished executive. Indeed, he is likely, if not certain, to become the successful executive or administrator in the wide affairs of both public and private corporations, about which I have already spoken. He is the executive expert of whom President Lowell of Harvard University spoke at the twentieth annual meeting of the National Municipal League, held in Baltimore last November.

> "The kind of expert that we need in a city is not merely the expert lawyer as a corporation counsel; it is not merely the expert physician as the health officer; not even the expert engineer as the builder of roads and bridges; but also the expert administrator. It is the man who knows how a great administrative body must be handled, who knows how to deal with the vast amount of business to be transacted; for this cannot be done by anybody who happened to get the votes. It must be done by an expert."

It seems to me clear that the expert of which President Lowell spoke, in so far as the interests to be administered include engineering affairs, must be the engineer who has not only the special qualifications to pass judgment upon the technical features of his administration, but also the general knowledge and correct perception of affairs which usually come first from broad and effective educational training and subsequently from professional experience. Even admitting that the engineer of executive capacity or administrative ability must be born correspondingly equipped, and admitting further that the broadest and most effective education will not create such an equipment, it certainly has been shown by much human experience that appropriate educational training will stimulate and render effective those qualities of mind and character which make the executive, and in some cases, at least, will awaken those qualities in individuals in whom they might otherwise lie latent. This relation, and others which have been indicated, between educational training and the professional practice of the engineer I believe to be established beyond all question. If education does not draw out and stimulate the mental qualities of its subjects, and even positively shape them in many cases for ultimate productive operations and useful results, then an immense amount of educational money and effort is being sadly wasted every year.

In short, the educational training of the engineer has a marked influence upon the subsequent professional practice, for the simple reason that that training stimulates and develops his mental activities largely along the lines which are then opened to him as vistas through which he gains views of those branches of science on which his professional practice will be based. While his subsequent activities and touch with things and individuals around him will modify to a considerable extent, and possibly in some cases radically change, those initial views, in the main their influences will remain with him. If his training in the engineering school has been narrow and confined to a comparatively small range of subjects in connection with which his mental activities have been developed by intense application to physical details of laboratory or other mechanical manipulation, or to other details, his views and his subsequent development as a professional man are likely to be controlled by these earlier experiences, which leave permanent limiting impressions upon a young man's capacity for development. On the other hand, an educational training of greater breadth in the field of engineering science, and best of all, based upon a prior general education, giving a command or effective use of a wide range of fundamental principles, will certainly both prepare a man for the best exercise of his mental powers in the higher fields of professional practice and at the same time induce in him the exercise of those forces of personality which we call in the aggregate executive or administrative capacity.

William H. Burr

# THE RELATION OF PHYSICS AND CHEMISTRY TO THE COLLEGE SCIENCE COURSES

DR. OGILVIE'S article on the Interrelation of the Sciences in College Courses* challenges the generally accepted theory that college study of science should begin with physics or chemistry. "There is nothing," says Dr. Ogilvie, "in the subject matter of physics and chemistry that makes them more fundamental than the other sciences;" and again, "There is no reason why these subjects should precede the other sciences, nor why they should be required of the non-scientists."

Physics and chemistry are supposed to be more fundamental in that the one deals in general with the measurement of all known forms of energy, the manifestations of energy, the transference and transformations of energy; the other with the combinations of elementary forms of matter and the changes in energy attendant upon the regrouping of the elements. It might be stated that the aim of chemistry is to investigate the reservoir of energy that may be made available by the combinations of the so-called chemical elements. Is there any known entity in the natural world more fundamental, more universal, than energy and matter (not entering here into the assumption of the electrical nature of matter)? Are there any phenomena in this material world that are not due to energy transformations or transferences? The subdivisions in science came about in the early stage of the development of science, when the patent feature was the nature of the *facts*. If the facts observed had to do with living organisms, the science became biology; if with the earth, geology, etc. But now that science has progressed beyond the classificatory stage, and attempts to penetrate into the domain of cause and effect, the essential oneness of all science is manifest. The fundamental principles of physics and chemistry hold whether we have to do with phenomena of living or of "dead matter." The broad generalizations as to energy have been made for the physical universe. That scientists appreciate the applicability of these generalizations in their branches of science is perhaps best shown by some published statements.

---

* COLUMBIA UNIVERSITY QUARTERLY, xvii, 241, June, 1915.

Dr. Charles S. Minot in his lectures on Modern Biological Problems delivered at Jena in 1912 says "Life is bound to matter. Vital phenomena are alterations of the living substance which we describe by saying that they are transformations of energy. But there always remains the possibility that consciousness cannot be explained mechanically, that it is neither a condition of protoplasm, nor a special form of energy, but something of its own kind, not comparable with anything else that we know, and that it reveals itself by causing transformations of energy." And again in the same lecture on The Conception of Life, in speaking of the methods of philosophers and biologists he says, "Philosophy, strictly speaking, is occupied chiefly with biological phenomena. Consciousness, the relation of the soul to the body, the origin of reason, the relation of the external world to psychical perception, and most subjects of philosophical thought are fundamentally biological phenomena which the naturalist investigates and analyzes. If these fundamental problems of human thought are ever to be solved, the solution will be presented to us, according to my conviction, not by philosophers, but by naturalists."." In the lecture on The New Cell Doctrine he says, "The living substance is more important to biologists than its tendency to form cells. Hence we consider the chief problem of biology to be the investigation of the structure and chemical composition, not of cells, but of living substance." These problems demand the combined attack of the biologist, chemist and physicist, and the most refined methods adapted to the purpose in each field. Even in the biological courses offered in college for the undergraduate, if theory is touched upon, a much better comprehension of the subject is possible with a knowledge of physical and chemical principles, if we accept the testimony of the thoughtful student. How can he derive much profit from the supplementary reading of researches when the principles upon which the methods and even apparatus depend are unknown to him?

Professor Kemp in his lecture on Geology in the Series on Science, Philosophy and Art at Columbia, 1907, states the relation of geology to the other sciences. "The great, round world in its entirety cannot be grasped otherwise than with the assistance of physics, mechanics, astronomy, chemistry, zoology, and botany. Geology is the application of all to a particular planet. . . . Not alone was its early growth based upon the sister sciences, but it now progresses with them, leans largely upon them for support, and in turn repays its debt by the contributions which it makes to each." Certainly the the very warp of the fabric of dynamical geology is physics, and no college course would be complete without an attempt to state the causes of the most striking geological phenomena now in operation.

As soon as astronomy departs from the purely descriptive side and enters the domain of astrophysics, it becomes physics applied to astronomical bodies; it uses physical apparatus and physical methods. The modern development of astronomy is absolutely dependent upon that of physics. All the insight that a first course in astronomy might legitimately give its students into methods of obtaining knowledge about heavenly bodies presupposes a knowledge of physics. And physics has enabled chemistry to pass into the theoretical stage of its development, where prediction in some fields is possible. The principles of physical chemistry are applied in chemistry from the start. The two sciences are inextricably interwoven. The thermodynamical basis of chemistry is being verified constantly. In general, whenever any science departs from its purely morphological side and attempts to get at the dynamical side,—that which gives the causes and the manner of its development, the more interesting side for research,—it calls upon physics and chemistry for conceptions, methods of attack, even apparatus.

There are distinct phases in the development of a science. First is the assembling of facts and classification of them. Next is that in which the attempt to explain origins, causes and relations of the phenomena leads to the formulation of hypotheses. Here the imagination of the scientist must enable him to devise experiments to test the validity of these hypotheses. Finally when confirmatory experiments have raised the hypotheses to the dignity of theories, which state the most probable origin, cause or relation based upon the present state of knowledge,—but subject to revision or discard upon the discovery of new or contradictory facts,—then the science passes into the mathematical stage in which prediction becomes possible. This means simply that it has become an *exact science*. This is the aim of all sciences. I think it cannot be denied that physics has advanced farther into this last phase than any other science. The chance that any new phenomenon within his domain will permanently elude all the great variety of modes of attack and fail to fall into a place in the physicist's "scheme of things" is small. It is the physicist who has contributed most to the solving of the nature of radioactivity, and who is now using the reflection of X rays from crystals and allied phenomena that have to do with the almost infinitesimally small to get at the constitution of the atom and molecule. He is causing the mineralogist to revise his theory of crystals, and the chemist his atomic theory.

This is not said in a spirit of boastfulness, but with rejoicing in the inspiring unity of science. If the physicist has devised means of measuring all kinds of energy, it is his duty and pleasure to contribute to the technic of every science. The results of his investigations are of use to all. Scientific research today in all fields contributes to the common fund of knowledge available to all. The narrow specialist who knows only one science is at a disadvantage in that he can tap this reservoir of science to only a limited extent. Faulty science teaching, and the unimportance of some so-called research is due in large measure, I believe, to extreme specialization, with insecure foundation in the broad underlying principles common to all the sciences.

If now the essentially fundamental character of physics and chemistry is granted,—and I do not see how it can be questioned,—there can be no doubt that students who desire to pursue other sciences ought to have at least one of them, and any student contemplating serious work in science ought to have both. Logically, then, these should precede other sciences. Their treatment of the fundamental concepts is simpler than that possible in the more complex problems of other sciences. From experiments in the laboratory the students gain an insight into nature's way of working and acquire methods that must be helpful in later scientific study.

The question then remains, is it wise to insist that the non-scientific student should take physics or chemistry for one of his two years of required science? The answer depends entirely upon the reason for making any science requirement for the A.B. degree. If it is to acquaint the student with some of the facts in the natural world about him, to open his eyes to observe, to direct his interest scienceward, then all sciences should undoubtedly be on the same basis. The first course then in each science should be avowedly informational or descriptive. Thus it would serve the purpose of the popular scientific lectures so common in the earlier days of science. I do not for an instant question the legitimacy of such a purpose, nor do I doubt that such a group of "first courses" would appeal to the non-scientific student, and even to the scientific student who is specializing in one field. If this is the aim, it should be frankly stated.

If on the other hand the motive in requiring science is to give the student an insight into scientific methods, to penetrate below the surface of the facts of a science into the region of investigation into the "How" and "Why," a logical introduction should be made by way of a fundamental science. He would have a better appreciation of the scientific methods of the second science he might elect. He would not be handicapped by a hazy notion of concepts that he must use and that are fundamental in physics and chemistry, nor would the instructor be obliged to duplicate instruction in certain lines in physics and chemistry which are vital to his science.

If the requirement in science is made because it is believed that training in a highly developed science has a mental discipline of a nature offered by no other great department of study in our curriculum and sufficiently valuable to be prescribed, then certainly at least one science that is representative of all stages of development should be required. This science should deal with phenomena and objects that the student himself can observe, not those for the most of which he must depend upon lantern slides, photographs, and the description of others. The phenomena should be amenable to experiment, and comparatively simple so that the student can vary one factor at a time and draw his own conclusions as to the extent to which each factor contributes to the result. From his experiments he ought to get a clear conception of the relation of cause and effect,—a conception whose value is not confined to the sciences, I am sure. Further it should have a sufficiently extensive collection of hypotheses and theories to afford him an admirable training of the imagination. This is based upon his experience with things and phenomena which he studies by the aid of his senses. He conceives the principles he has thus acquired to be operative in the realm beyond the range of his senses. He devises experiments to test them. He judges as to the conclusiveness of these tests. He reshapes his hypothesis, if any experiment or known fact is contradictory. Accurate observation, logical reasoning, and constructive imagination should all be exemplified in the required science. It must be granted, I think, that all sciences are not equally adapted to these purposes, at least in the courses suited to undergraduate instruction.

Poincaré said, "Whenever a science is mainly concerned with the remote past, whether this science be archæology, or geology, or anthropology, or Old Testament history, the principal theoretical constructions always include features which no appeal to present or to accessible future experience can ever definitely test."

Professor T. C. Chamberlin says, "It is easier, and apparently in general more interesting, for those of limited training and maturity to accept a simple interpretation or a single theory and to give it wide application, than to recognize several concurrent factors and to evaluate these as the true elucidation often requires." "The studies of the geologist are peculiarly complex. It is rare that his problem is a simple unitary phenomenon explicable by a single cause. Even when it happens to be so in a given instance, or at a given stage of the work, the subject is quite sure, if pursued broadly, to grade into some complication or undergo some transition. He must therefore ever be on the alert for mutations and for the insidious entrance of new factors. If therefore there are any advantages in any field in being armed with a full panoply of working hypotheses and in habitually employing them, it is doubtless the field of the geologist."

I understand that some of the leading architects strongly advise the student of architecture to make elevation and ground-plan drawings directly from a building, and to model ornaments and decorative moldings before making drawings of them, in order that he may be able to visualize his building when later he works entirely from drawings. Certainly in science too this power to visualize in the realm where the senses can give no direct evidence of the mechanism is most safely trained by actual contact with things with which he can experiment. The power to visualize equations and forms in mathematics is greatly aided by the concrete examples from physics.

There is no need of making mathematics "paramount" in the first course in physics, nor do I believe that it is the custom now in colleges, though it may have been so earlier. No mathematics beyond that of required courses is used in the average college first course in physics. It ought not to be a hardship to use tools with which the student is already familiar. It will be a help in fixing those principles to use them with concrete examples.

Before any revision of the college science requirement is made, I believe there should be a frank discussion of the aim of the requirement. Then the question of what sciences are to be required, if any, seems to me to answer itself.

MARGARET E. MALTBY

## AMERICAN AND LATIN AMERICAN

THOUGH wars may rage and statesmen imagine a vain thing, the effective relationship among nations rests ultimately upon the attitude of the man-in-the-street. What he thinks he knows about foreigners determines in the long run what he believes about them, and it shapes accordingly the actions of himself and his fellows. Arms and finance, commerce and diplomacy, eloquence and the language of platitude are alike powerless to create the real sentiment of one people toward another. Until each knows definitely that the other is not as commonly represented, suspicion is bound to lurk within every outward demonstration of friendship.

The man-in-the-street is the average citizen of education and of a degree of intelligence corresponding to it. Since his brow belongs to the class of neither the high nor the low, his stock of information, presumably, must be that of the level-minded, and hence altogether trustworthy. Yet it is just this particular individual who needs educating, if ever international prejudices and resentments are to disappear.

Suppose the typical American be asked what he thinks he knows about the countries grouped under the geographical expression "Latin America." He will answer that they are parts of a region south of the United States, inhabited by a variegated population, dominated by petty despots, productive chiefly of earthquakes, coffee and rubber, and seething with serio-comic revolutions. That is what he gets out of the newspapers and out of the stray books he may read. Ask him, furthermore, his opinion of what the Latin Americans think about the United States, and he will probably reply that they view it with much the same satisfaction that he feels himself.

On the other hand suppose similar queries be put to the Latin-American man-in-the-street regarding this country and his own To the first he will respond that the United States is a large region south of Canada, inhabited by a mixture of European peoples and by Africans, dominated by politicians, productive chiefly of the almighty dollar, railway collisions and divorce cases, and seething with graft and municipal corruption that are far from comic. The second he will answer in much the same way about Latin America as his northern comrade did about the United States. His ideas likewise are derived from newspapers and random books.

To be sure, both the American and the Latin American are as mistaken in their assumptions as they are in their evaluations. Persons thoroughly familiar with the actual situation in the areas concerned are aware how absurd such a characterization is, despite its truthfulness in spots. But the trouble is that the "average citizen" does not possess this plenitude of information. He resembles too much the kings of charter days who, by "special grace, certaine knowledge and meere motion," disposed of distant portions of the earth without regard to prior rights or privileges. Just so do the American and the Latin American of the kind in question dispose of each other's character and reputation. Their attitude betokens the existence of the same blend of misinformation and mistrust with self-complacency which proceeds from a single source—mutual ignorance, and calls for the same corrective—mutual understanding.

Long before the United States came into being as an independent nation, Latin America had fallen under the ban of our forefathers, and the interdict survives among the majority of their descendants. In spite of geographical proximity, the whole trend of relationship has been divergent rather than convergent. Both this country and the twenty republics lying to the southward have drawn constantly closer the bonds that connect them with Europe. Politically and commercially, intellectually and psychologically, their minds and hearts are attuned with those across the seas. The Lord may have made them neighbors, but nearness on the map has not made them friends.

Arms, finance, commerce, diplomacy, eloquence and platitude have all been tried and all have been found wanting. They may have helped men to power and influence who would have arisen to them in any case; they may have enlarged the knowledge of those who would have acquired it in any event; they may have benefited the exceptional, fostered the select and nurtured the needless; but they have not reached the man-in-the-street. He persists in thinking in the same old fashion, because the ways of tradition, the currents of common belief, cannot be turned so readily to suit the wish of the masters and leaders.

Interesting though an historical investigation might be of the causes of the apartness between the American and the Latin American, and of the mental attitude that follows, it is the problem itself and its solution which claim immediate attention. If the obvious and the customary methods for the promotion of understanding among nations have been as unsuccessful in operation here as those for the increase of misunderstanding among nations have been efficacious in Europe, then something new must be sought and applied. As already observed, that new thing is education. What forms should it take in order to be of the greatest service and how should they be applied?

The kinds of education hitherto employed in the furtherance of an understanding between the American and the Latin American have not always been productive of the most desirable results; for, as happens in the case of the other agencies of international approximation, they have failed to work specifically enough upon the man-in-the-street who shapes the sentiment that endures. Their appeal, rather, is to the uneducated who have no influence, or to the highly educated whose influence is confined more or less to their class.

One sort of education attempted in reference to Latin America is that associated with evangelization. Movements in this direction have often started from the standpoint of assuming in the southern countries the existence of a lower standard of morality and intelligence than that found in the United States. That educational facilities comparable with those in our own favored land are lacking in the majority of the Latin-American republics is undeniable. So also is the possibility of improvement, even in the countries where the percentage of illiteracy is relatively small. Both these circumstances are freely acknowledged there. Nor can it be doubted that some disinclination is shown at times in regard to the instruction of the lower classes, albeit more felt than admitted. Concerning the second point of alleged inferiority on the part of the Latin American, even were it possible to prove statistically the prevalence of so large an amount of moral delinquency as is too commonly supposed, a certain injunction about motes and beams might well be heeded, in view of the widespread conceptions of the American held by the Latin American, to which allusion has already been made.

Without desiring to broach the general question as to the wisdom of carrying on a Protestant propaganda as such in Roman Catholic countries, something may be said of the activities of the American Protestant, especially in connection with his possible usefulness as the promoter of a better understanding with the people of the southern countries. To a very large extent Protestant missions have reached in effective fashion only the lower classes, because the mentality of the latter is ordinarily too little developed for them to perceive much essential difference between the one form of faith and the other. Which of the two they accept depends sometimes upon the comparative appeal of the "loaves and fishes" argument that either may put forward. The upper classes, on the other hand, are disposed to resent efforts to displace the creed of their ancestors by another phase of the same religion, which offers no more positive guaranty of salvation than its competitor, and may be more irksome in its observance. If an earnest and consistent endeavor can be made, without flaunting the eschatological advantages of Protestantism, to point out what can be accomplished by the institutions and enterprises organized and operating under Protestant auspices for individual and social uplift in the moral and civic sense, it would carry an appeal to the averagely educated which would be strong and abiding.

Turning to another set of activities which have been brought into play with the same end in view, one may mention the exchange of professors, lecturers and students, the holding of international congresses, the entertainment of distinguished individuals, the distribution of printed matter and the translation of the literary masterpieces of one nation into the vernacular of the other. Useful though all of them are in making an impression on the public mind on both sides of the line, they need amplification at several points in order to reach more effectively still the man-in-the-street.

Education aimed at the development of mutual knowledge and sympathy between the American and the Latin American requires at the outset the cultivation of a spirit and an attitude based on three general considerations. Of these the first calls for the providing of accurate knowledge in regard to the characteristics of resemblance and difference visible in the history and present conditions of the several republics and their respective inhabitants. The second would posit a sincere and generous recognition of their interests, activities and accomplishments in the social, intellectual and artistic, as distinguished from the merely material, aspects of human effort. When a man thinks that his neighbor is concerned about him only to the extent of ascertaining what he can or will buy or sell, the state of mind thus produced is one suggestive of business, and not of friendship. If this be true among men in general, it is particularly the case among Latin Americans, who resent an appraisement that recks only of goods and chattels, disregarding the finer things of life. On the assumption, too, that the American is practical and the Latin American poetical, the former must put more poetry into his thoughts and acts if the latter is to take on some of that practicality. The third foundation on which the superstructure of understanding is to be built by education is the lending of friendly coöperation in the form of advice, example and endowment where these may be offered to the best advantage.

The means by which a sympathetic understanding may be established between the American and the Latin American are primarily personal and social. In both respects they should be designed to reach the largest number of individuals possible, be carried into effect regardless of reasonable expense in time, trouble and money, and, where information of any sort is required, be made complete, rendered accessible in English, Spanish and Portuguese, and kept absolutely up-to-date. Whether the several specific modes of action hereinafter suggested be taken up one at a time or concurrently, the important thing is that, if adopted, they be prosecuted with the earnestness, thoroughness and vigor which insure success.

To begin with, it is altogether indispensable for the men of this country and of the twenty southern republics to know one another. In both areas the query arises constantly, whenever the name of an American or of a Latin American, not favored with especial publicity by the newspapers, is mentioned, who is he? Regarding the citizen of Latin America whose identity is sought, our encyclopædias are usually silent. If they answer the query at all, the individual commonly happens to be dead. Even then they are apt to ignore the fact that he ever lived. So great indeed is the confidence in those repositories of learning cherished by the American that, when he cannot find the name of the person about whom he is seeking enlightenment, he jumps naturally to the conclusion that the object of his quest is of no importance anyhow, and probably that the same is true of the country with which he is associated.

For the Latin American, if he reads English, there is a "Who's Who" that will furnish him practically all the biographical data he needs about his northern neighbors, and presumably in the most accurate form, given the fact that the material, as a rule, is supplied by the individuals concerned. Nothing of real importance, at all events, is apt to be left out. But the Latin American ordinarily does not read English; hence the information offered in this respect is of scant, if any, service. On the other hand, no such book of reference exists at all in the southern republics, even in any of the languages spoken among them. A "Who's Who in Latin America," therefore, is a fundamental prerequisite to understanding, and the sooner it is published the better. True, the difficulty in gathering and editing the data will be infinitely greater than is the case in the United States; but the effort is worth while if the understanding in question is also.

Accompanying this "Who's Who" there should be a "What's What in Latin America," or in other words a comprehensive encyclopædia of that area, arranged in the most easily accessible fashion, and far more precise in detail than what is afforded by existing compilations of a general sort. Turn to practically any good encyclopædia and one will find copious information about lands of much less importance, potential if not actual, than the southern countries of the New World. How these repositories are put together is well known to the initiated; how their editors gather data in many cases from sources easily obtainable, and not infrequently by a judicious use of scissors and paste-pot, needs no elaboration here. Suffice it to say that Latin America for them is such a "terra incognita" that, from the commercial standpoint at least, the time, trouble and expense involved in assembling the information desired constitute an effective deterrent to any thoroughgoing search. If our man-in-the-street now wants to find something about that portion of the earth's surface, he may have to plough his way through all kinds of irrelevant matter only to discover, when he arrives at the alphabetical point where he might expect the object sought to be, either that nothing is vouchsafed or that the statements given are inadequate or otherwise defective. Desirable though it doubtless is to strengthen the present general encyclopædias in this regard, it would be more advisable still to single out Latin America for especial consideration and assign to it one of its own.

In this new compilation only live, actively interesting data should appear. Unlike the ordinary encyclopædia, with its huge assortment of matter often of antiquarian or of highly specialized attraction, it should contain a record of what people in Latin America are really doing in the occupations of daily concern. The man-in-the-street cares little about what happened long ago, or about the strange things of earth, or the queer customs of aborigines, or wondrous adventures in wilds primeval. These and an abundance of facts, more or less accurately stated, in regard to natural resources, industries, commerce and transportation, he can readily find. But what he wants to know is what men are thinking and saying and doing in the southern lands along the same lines that he follows in the United States—activities in a word that are of direct and intimate and genuine human interest from day to day. Suppose, for example, he wishes to secure definite and trustworthy information about schools, or social service, or industrial legislation, or party organization, or banking, or newspapers, or music, or literature or a variety of social and civic usages and achievements, he will search for them in vain. These, however, are among items that should bulk large in any handbook of the sort on Latin America.

Now, assuming that the man-in-the-street has arrived at the point where he wants to read books on any particular subject connected with the matter in hand, what ought he to read? How is he going to ascertain what is truthful and reliable in the great mass of literature that has been turned out in recent years? He may shuffle the card catalogue in a library as much as he likes, but names and titles will reveal nothing to him on the point of intrinsic or relative value. Where is he likely to find reviews of books written by persons who know, not only the language in which the works are composed, but the subject matter of which they treat? Again his tour of discovery ends in disappointment. Here evidently is a gap that needs bridging over by a comprehensive bibliography that will afford an accurate, discriminating estimate of the books to be read and possibly, also, of those to be avoided. Moreover the list should be arranged, not simply according to the names of authors or countries, but by topics with cross-references easily located.

Another course of action that will work to the promotion of genuine understanding between the people of the great northern republic and their southern neighbors consists in the enlargement and improvement of the representation of news agencies. On both sides of the boundary between the two Americas measures should be taken to have the collection and despatch of news placed in the hands of men who will communicate, not the trifling or the sensational as is now commonly the case, but the genuinely important among the events of the day. One has learned to know what a tremendous responsibility attaches to the post of correspondent in other parts of the world, and the value of the information sent is apt to be determined accordingly. About Latin America to the American, and about the United States to the Latin American, anything apparently has seemed worthy of transmission, provided only that it will confirm existing impressions that tend to prejudice rather than to enlighten. Journalists of the flowing pen in newspaper or hasty book ought no longer to be the chief vademecum for the communication of statements and opinions to or from the lands and peoples under consideration.

Finally there is a series of personal and social activities bearing immediately upon community life which could be turned to excellent account in strengthening the understanding between the American and the Latin American. To a greater or lesser extent every one of the southern countries needs and wants the inspiration, the advice, and the direction of competent men of affairs belonging to the more advanced nations of the world, in enabling it to solve the problems of how to secure and how to promote human comfort and welfare. From them messengers are coming constantly to the United States in search of ideas, models and guidance in general which promise aid in the performance of the duties that governments owe to their citizens and the citizens to their fellows. Of Americans residing in Latin America the same assistance is requested times without number. It is the cry of the man in the vision of St. Paul: "Come over into Macedonia and help us!"

The variety of respects in which such a disinterested service of friendship could be rendered is legion. Some of them are the following: harbor improvements; railway construction; street and road building; city planning; education, especially in the form of vocational training; social settlements; hospitals; orphanages; day nurseries; asylums for the indigent, friendless, delinquent or defective; mothers' meetings; neighborhood houses; prison associations; societies for the prevention of cruelty to children and animals, for the encouragement of sanitation and for the checking of communicable diseases, like tuberculosis, for the better housing of the poor, and such other devices, institutions or practices of administrative, economic and social utility as have attained success in this country. Wherever introduced or stimulated, a systematic study should be made in advance of what may have been already achieved in these directions by local agencies of any sort. Their support, also, should be enlisted, not with an attitude of patronage or charitableness, which is certain to ruffle susceptibilities and cause the best of endeavors to fail, but with a spirit of loyal and hearty cooperation which smooths away initial difficulties and insures an easy running.

Counsel, suggestions, examples, and even direct and concrete aid should be furnished, wherever desired, in Latin America itself by men sent thither for the purpose, by men who know, who speak the language of the people concerned, and who can supervise and manage. If they came, not from the government of the United States, but from private organizations and individuals in this country, animated by the willingness and possessing the means to make the projects realities, they would be gratefully received. Proceeding from the former, they might awaken a dormant suspicion as to ulterior designs of the "Colossus of the North," however unjustifiable the feeling may be; proceeding from the latter, if wise in concept and execution, they would instill the confidence and arouse the enthusiasm which make for genuine human sympathy and understanding.

WILLIAM R. SHEPHERD

# THE COMMERCIAL OPPORTUNITY OF THE UNITED STATES IN SOUTH AMERICA

ALTHOUGH South America has always been a rich field for endeavor, at no time has it seemed so much within our reach as it does to-day. Certain great events have happened to turn the popular fancy towards South America; but back of everything else is the fact that we have reached a point in our own internal development which makes it possible for us seriously to undertake the entry into that field. For years we had a banking system which made no attempt to cope with world conditions and which at times proved sadly lacking in taking care of our own local demands. Under the Federal Reserve Act our banking system now closely resembles the banking systems of the other great nations of the world. In the past the law practically bound our banks not to extend business facilities outside of our domestic markets. Now that the banks have a right to establish foreign branches and also to accept drafts against foreign shipments so as to give time for the merchandise to be transported and marketed, there is nothing to prevent our building up a financial machinery for foreign trade equal to that of any nation in the world. Other conditions are also right in this country to make us ready to look abroad for trade. Under the influence of great natural wealth, and with a people who are the most lavish consumers in the world, we have developed a very great power of production, which within the last year or two has gone beyond our consuming capacity. Since manufacturers generally are not running their factories to full capacity, they should be ready and willing to make articles and prices to suit the foreign consumer. Just at the moment the low rate of interest that is offered for money for short periods in this country tempts the investor to consider a few of the South American offerings which stand the test of soundness upon investigation and which at the same time pay a comparatively high rate of interest. The fact that it is becoming less difficult to induce our people to live abroad opens the way to our establishing a permanent American influence in South American countries. With our high schools and colleges every year turning out men trained for the gentler walks of life, it is found that in many cases the applicants for clerical and professional positions are often greatly in excess of the demand. This means that some of our young men must seriously consider making their homes in South America just as the young Englishmen and young Germans have been doing for the past twenty-five years. Evidently we have now in this country the elements to enter into South American trade in a serious and comprehensive way.

The question is, have we the ability to persuade our South American neighbors to trade with us, and if trade does come to us, shall we follow it up so persistently as to be able to hold it permanently? The first thing to be realized is that South America is no trading-post proposition. Many of the cities there antedate all our own New England commonwealths as centers of comfort and civilization. The fact that England alone has an investment in South American securities of over five billion dollars indicates the importance and stability of South America as an investment market. We already have some important business connections with those countries, but the countries of Europe entered that field long before we did and in a broader and more organized way. European business is so well established in South America that it would have taken years of work to induce the people who have been served so well even to try our goods. With the general paralysis in Europe caused by the war South America is now not only willing to try our goods, but needs our financial facilities, our manufactured articles, and our business enterprise. So also certain South American products which have always found a favorable market in Europe are now sent to this country, and the opportunity is offered us of showing that we can handle these products and market them as successfully as has been done in Europe in the past. Whether the business that is coming to us in this way is to be temporary or permanent depends on our own business ability. If we merely execute the business that is now forced to come to us, we shall find that when conditions change it will slip away as easily as it came. If we go after the business and make up our minds to give a better service than has been given in the past, we shall find that there is no one more loyal to his business connections than the South American, so that the relations we have made will be lasting.

It must be remembered that the orders coming to us now are usually only for practically the necessaries of life. People are waiting for many things until they can order them from the sources from which they have been accustomed to receive them. There are, however, countless articles in this country which are just as suitable as the European articles and which in many cases are of better quality. The first step in capturing all this business is for the manufacturer or group of manufacturers in similar lines to send out a trained specialist who can make clear all the good qualities of the article to the prospective users and to the business men who will supply them locally. To start any line of business, the article must be intelligently presented to the buyers, after which the business should grow along natural lines. Some manufacturers will do a mail order business throughout the various parts of the new country; others will deal with some of the local houses who act as distributors about the main centers; others will do business with the foreign merchants who act as distributors in a more general way. After articles have once been introduced, the function of the merchant comes in to put the business on a permanent basis by placing stocks within easy reach of the buyers at the time they need them by providing the necessary warehouse and credit facilities to meet the demands of the local market.

A further essential element in the increase of foreign trade is adequate ocean transportation. As a general rule the steamers of the great shipowning nations have always been available to carry cargo to and from any ports that offer a fair freight for the service. In some cases American capital has invested in foreign tonnage and has worked exclusively towards building up trade between the United States and South America. As our trade grows there seems to be every reason to believe that steamers will be available to carry the cargo. All our increasing trade needs is the opportunity to have cargo carried a given number of miles as cheaply as the cargo to or from competitive markets is carried a similar number of miles. The fact that there are steamers under various flags offering to go to any part of the world at a given figure per month on time charter means that no market need be handicapped provided it has both an import and an export movement. We cannot and need not depend on American steamers exclusively to supply the tonnage for the new trade that is developing. Since the cost of operation of American steamers is considerably higher than the cost of operation of the steamers of other nations, until there is some change either through a cheapening in operating costs of our steamers or through an increase in those of other nations it is not to be expected that steamers under the American flag can be a permanent influence in the carrying trade. It would be possible to carry cargo in American ships under Government operation, but any such attempt would of course stifle all private enterprise. Besides, the time is not opportune to try such an experiment, as the cost of new or second-hand tonnage is exorbitantly high, so that if our government should acquire ships now it would be on such a basis that they would either have to charge high rates for the next ten years while they were amortizing the cost of the steamers or operate at a loss so that goods would be transported at the expense of the taxpayers. The most practical thing that could be done to assist trade between this country and South America would be the awarding of sufficiently heavy mail contracts to enable passenger steamers to run regularly between this country and the more important South American ports. In the past the more important regular liners have run to England, France, Germany and Italy, with the result that the trend of travel has all been in that direction. With our increasing trade we want the people of South America to come here frequently so that they can see our great progress and perfect their business arrangements.

In addition to all the operations necessary to build up a great trade between this country and South America, if we are to make the effort permanent we must not fail to put our men in those countries and we must make substantial capital investments there. Men from most of the countries of Europe have made their homes there. They go there to settle and to enter into local industries, and as a general rule they have been successful. So far the American in South America has gone there to take a quick profit and has not remained long enough to be constructive and a real influence. Although South America has its big cities, there are big districts which are thinly populated and which correspond to our own western country of the past in that they have not been exploited. This means that there are railroads to be built, mines and farms to be developed, and improvements in the cities to be made as the surrounding country grows. The investment of American capital carries with it the American engineer or American farmer. One sugar planter following American methods will start all his neighbors inquiring about American machinery. Put an American engineer on a railroad survey and the road will be constructed of American ties and American rails. Put Americans in charge of a railroad and you will have American rolling stock. In a mine, if the miners or the mining engineer is American, the mine will be worked with American mining machinery. Every time any American article makes a record for quality or efficiency it opens the way for the sale of other American goods.

It is true that up to the present South America has been developed with European capital; but so was our own west to a great extent at the beginning. There is still time for us to enter the South American field and become the dominating factor. It took personal sacrifice, constructive ability and sound common sense in investing to build up this country. If our people are ready to put the same effort into business in South America, they will find a ready response and success is assured.

J. P. Grace

# LITERARY EXCHANGE WITH SOUTH AMERICA

IN the summer of 1914, the delegation of university professors sent out by the Pan-American division of the American Association for International Conciliation, to visit South America and establish cultural relations with the leaders of the South American Republics, visited many faculties of medicine, law and sciences, and was received by large delegations composed of members of those respective faculties. It was a pleasure to find so many of these doctors, lawyers and scientists able to talk fluently and well English and French. I venture to say that similar delegations from faculties of medicine, law and science in our country would not be found to contain an equal number of men able to speak with equal ability French and German, the two foreign languages which have been most cultivated among us. Not only were these gentlemen able to converse fluently with us in one or the other of the languages mentioned, or both, but in many of the institutions that we visited some delegate was able to receive us with a formal extemporary address in English. I wonder why, in our own country, we have seemed always so loath to acknowledge by our practice the desirability of such an equipment for any man who claims world citizenship; for it is self-evident to the veriest tyro that such an equipment adds much to the presentaability of even the most expert scientist or authority in any field of human endeavor.

This linguistic ability is perhaps due to the greater cultural training that seems to be given to their scientists and engineers. The majority of the Spanish-American students at the University of Illinois, for example, come there for some form of scientific work. Though in the vast majority of cases they are boys of the same age as our own college students, yet their training in the literature of their own land and of the Spanish or Portuguese motherland far exceeds the acquaintance of our American scientific students with any literature; and in many cases these Spanish-American scientific students know more literature (long pieces committed to memory) and more about literature than do even our students in a college of liberal arts. On the steamer going down to Rio I met a young Brazilian lad of seventeen who had just finished the third year of an electro-technical preparatory course in a school near Philadelphia. He entertained us one evening for more than three hours with information concerning Brazilian and Portuguese poets and prose writers, and with long quotations beautifully recited from their best poets. The next day, at my request, he furnished me with eight closely-written pages of information concerning Brazilian writers. On the same steamer, a young lieutenant of the Peruvian army, in the corps of engineers, gave us, with the same extensive quotation, information about the leading Peruvian poets and prose writers. He seemed also very well informed concerning Peruvian artists. In this particular case I found, upon reaching Peru, that the information and opinions furnished me by the young lieutenant (he could not have been over twenty-five years of age) coincided with the opinions generally held among people who were well informed. Frankly, I wonder how many high school boys in this country who are pursuing a technological preparatory course, and how many lieutenants, graduates of West Point, who are serving in the United States army, could match the performances of the two young men whom I have mentioned, and whose cases I am bound, from my experience with their compatriots at the University of Illinois and at Columbia, to think really typical.

The literary culture of our young collegians, comparatively meager in general, is almost entirely lacking in the field of Latin America. We utterly fail to have any adequate conception of the state of culture that is actually to be found in the least advanced of those countries, to say nothing of the cultural conditions in others which in some respects are more advanced than we. The linguistic training and aptitudes of the younger generation of Latin Americans are the natural product of their antecedents and their surroundings. Despite the relative youth of these countries as independent political entities, their development in arts and letters has already made great advances; and among their writers and artists are some who would grace any country and any age. What we need in this country is more widespread and accurate information concerning these artists and writers, so that we may reach a more sane and just opinion of their merits. In addition to this information we should have easily available all over the country well made translations of the best of their works, and good photographs or other reproductions of the best of their artistic product. The possession of these would go far toward correcting many erroneous impressions and opinions which, without any ill will toward the South American countries, are still to be found among us. And we may rest assured that, if such a campaign of cultural publicity, so to speak, were carried on among us, our Latin-American friends would lag no whit behind us in carrying on a similar campaign concerning us. Already they far outdo us in the matter of official exchange of publications, since the governments of many of these countries are willing to send, and upon request do send, to any of our larger universities, all the governmental publications, receiving in exchange our considerably smaller university output. By a generous system of exchanges we should make our scientific, historical, and literary learned journals more widely known among them, with cordial invitations for collaboration. That they would appreciate such action on our part was shown by various inquiries that were addressed to our delegation concerning such publications among us, and concerning the terms on which South American collaboration would be welcome and acceptable.

Further evidence of their readiness was furnished by the editor of one of the largest and most influential of the South American dailies. "I beg you," he said in substance, "to preach in season and out of season (and I know how much you are already doing along these lines) the desirability of a wider study in your educational institutions, not only of the language, literature, and history of Spain, but also of the literatures, history, institutions, and culture of the South American countries that were first founded by colonization from the Hispanic Peninsula. And I pledge you to continue what I have already begun, a campaign for the wider study throughout the educational institutions of my country, not only of the language, literature, and history of England, but also of the literature, history, institutions, and culture of the United States. For I am convinced that such reciprocal courses of study will go far toward arousing and developing a wider understanding, appreciation, and affection between our peoples."

JOHN D. FITZ-GERALD

# MEMORIAL SERVICE

St. Paul's Chapel, Columbia University

Sunday, October 24, 1915

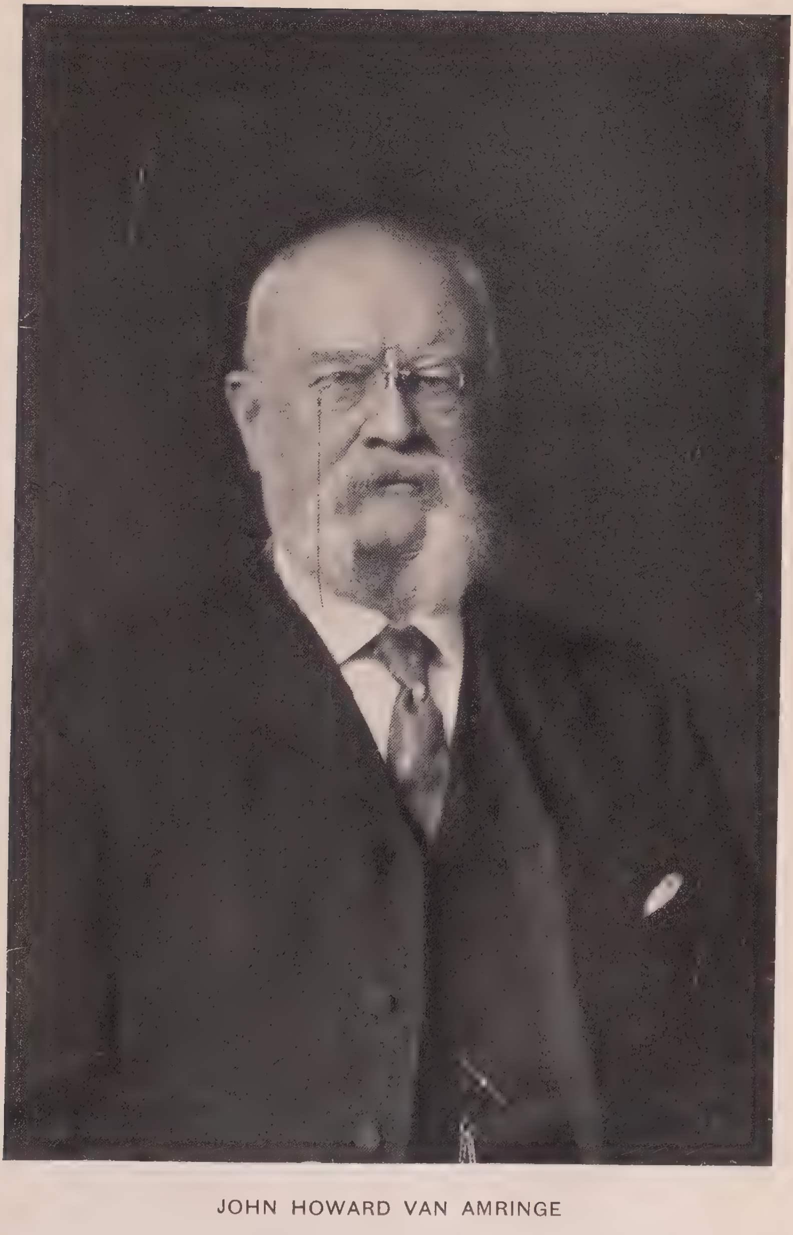
## John Howard Van Amringe

Prelude.
Processional Hymn 521.
Collect:

Our help is in the name of the Lord, Who hath made Heaven and Earth. The Lord is nigh unto all them that call upon Him, that call upon Him in spirit and in truth. Let us pray: Direct us, O Lord, in all our doings with Thy most gracious favor and further us with Thy continual help, especially as we here assemble in gratitude and praise to Thee for one who was Thy faithful and beloved witness among men, that, in all our works, begun, continued, and ended in Thee, we may glorify Thy Holy Name, and finally, by Thy mercy, obtain everlasting life, through Jesus Christ, our Lord.

Lord's Prayer and Versicles.
Psalm 91.
Lesson: Proverbs, 3d Chapter, read by the Rev. Duncan H. Browne, '05.
Nunc Dimittis.
Reading of Resolutions.
Hymn 176.
Address of the Honorable Seth Low:

It is impossible to pay a more eloquent tribute to Professor Van Amringe than was paid to him by that great outpouring of Columbia men which crowded Trinity Church on the day of his funeral. That



JOHN HOWARD VAN AMRINGE

was a perfect tribute; for it was the spontaneous action, inspired by the common purpose to do his memory honor, of the Columbia graduates of a period exceeding fifty years. Well may the city have said, as it witnessed that spectacle, "Behold how they loved him." One of the newspapers of the city, in speaking of him after his death, said, "At Columbia, Van Am. was more than a personality; he had become a tradition." I liked that phrase. It reminded me of what the Bible says of Enoch, that he did not die, but was translated. And I like to think that Van Am. is not dead to us of Columbia; he has only been translated to that high firmament in which our academic immortalities shine like the stars forever, to be a light and an inspiration to the men of Columbia to the end of time.

As a student I look back upon Professor Van Amringe as one of the three great teachers under whose influence I came. Nobody ever learned anything from Professor Van Amringe by rote; for he was a true educator. He drew out of a man what was in him; and he never ceased to pull until it came out, if it was there. One either had to learn a thing because he knew it, or else he would never learn it. I think that was his great art as a teacher.

It was my great fortune, when a student at Columbia, to come for a little space under the influence of Professor John Torrey, then the Professor of Botany, and he said to the class one thing that I have never forgotten. In the course of a lecture, happening to mention Asa Gray, Professor of Botany at Harvard University, he said, "Young gentlemen, many years ago Asa Gray was my pupil; but for a great many years the pupil has been the master." I never heard Professor Van Amringe say exactly that; but I think he enjoyed the full happiness the teacher can enjoy, because there was nothing in him which detracted in any way from the joy he took in the achievements of his students. They might surpass him, if they could; and he was as glad of their performance as if it was his own. I think that when a teacher acquires that spirit he really does have more happiness than any other man.

As an alumnus I came early under the influence, the enthusiasm, and the deep devotion to Columbia which marked his whole life, which grew with his growth, and which has been noted in every set of resolutions to which we have listened this afternoon. No one who has borne the proud name of Columbia has come in contact with him without finding new significance and new inspiration to serve well his day and generation.

As President of the University for a few years, I had the pleasure of being associated with him as a member of the faculty, and as Dean of Columbia College. No man was ever more faithful to duty. He had that conception of duty which a teacher owes to students in a university, which did not leave the element of discipline out of account. He thought it no kindness to let the student do what he pleased, whether it was right or wrong. He was not averse to letting a student choose, within limits, what he might do; but, when he had chosen, he expected him to do it as a man should do the task that he has chosen. As dean, he was my ideal of what a dean should be, and I think he was the ideal of us all. There, again, one saw his sense of duty, as illustrated by the obligation to maintain discipline. Sometimes it is hard to discipline, but Professor Van Amringe knew the time to discipline. Therefore he was strict; but, on the other hand, I never knew a man who would take so much pains to save a student when he saw him going wrong. If he could snatch a brand from the burning, I think it was his greatest joy. And, as a man, these salient qualities, which made him the ideal alumnus of Columbia, made him also the good churchman and the good citizen. His character was four-square to all the obligations to which life brought him.

I spoke a little while ago of the tradition of Columbia. If I were asked to-day what Columbia University is, I should not say it was this splendid pile of buildings; I should not even say that it was this body of teachers or the body of students, nor yet the body of alumni; but I should say that it was all its living members, teachers and students, inspired by the great tradition of the men who have gone before. Of that great and inspiring tradition, our friend, our teacher, our colleague, our fellow alumnus, is a part forever.

Daniel Webster expressed a fine sentiment in one of his speeches, in which he speaks of life as being but a link in the great chain of being, which begins with the origin of our race, binding together the past, present, and future, and terminating at last with the consummation of all things earthly at the Throne of God. So I think of our Columbia tradition. You and I are but the links in the great chain of that tradition, which binds together the past, the present, and the future, and which will terminate at last, I believe, only at the Throne of God. For where else can such a tradition end, except at the foot of the Throne of God, which is the source of all life? That is the faith of Columbia University, "In thy light shall we see light."

Address of President Butler:

There are moments in the life of our University when we all experience a rare elevation of the spirit. Those occasions, those great occasions, are infrequent, and they are of various kinds. Perhaps the greatest of them come but once or twice in the lives of most of us. They are associated with the splendid and ceremonial celebration of some great anniversary or undertaking or with the induction into office of a new administration; or they are associated with the passing from life of an academic hero, of one about whom the love, the tradition, the understanding of our great university has gathered and entwined itself. We are drawn together today in one of those rare exaltations of the spirit, by a feeling of common love for a friend, a colleague, a teacher, an associate, if you will; but first of all a friend and an exponent of everything for which our college and our university stand.

I like to think of him as having passed away in the fullness of his manhood and physical strength. I like to think of him as having missed the weeks, the months, the years of feebleness and suffering that are so common, and as having gone down to the banks of the dark river and called for Charon's bark to ferry him over to the land of shadows, bearing in his hand the golden bough which gave him the privilege of passing to the World of Spirits without passing through the Valley of the Shadow of Death. I like to think of him in the plenitude and fullness of that richer and greater life, where the footsteps of knowledge cannot follow, but where the eye of faith can discern his presence and dwell confidently upon his immortality.

If we go back over the history of our college for a century, we find that it easily divides itself into two periods, each dominated by the personality of a great teacher. Together those two personalities mark and typify Columbia College for a full hundred years. The first period was marked by the dominant force, the high character, the profound scholarship, and the power over men of John Mac

Vickar, professor of Moral and Intellectual Philosophy for forty-seven years. He typified the college during the first half of the nineteenth century. He stamped himself indelibly upon the small groups of faithful men who constituted its classes. By his contributions to scholarship, to public service, and to life, he well and worthily represented Columbia College during half a century.

And then followed the period in the history of the College that was dominated by the personality of John Howard Van Amringe. This is our period, the period that we know, of which we are a part, into which we have entered with fullness of knowledge and appreciation. We have seen the college grow with him, and we have seen him grow with the college. We have seen these stupendous changes come round about him, and with him as an active agent in their making. We have seen him grow in power as an interpreter, and as the voice, of Columbia College in its greater expansion, in its more complex relationships, in its larger responsibilities; and we of this generation shall always think of our college in terms of his beloved and dominating personality.

Professor Van Amringe was a teacher of Mathematics, but that was an accident. He might have been a teacher of Latin and Greek, for he was an accomplished classical scholar, and during his undergraduate days the classics were his chief interest. He might have been a teacher of History, for he came early under the influence of Francis Lieber, and was one of his favorite and most devoted pupils. But he preferred Mathematics as a branch of science, as a medium for reaching human minds and human hearts. I have always thought that there was something curiously appropriate in his choice of Mathematics as the agency of his academic influence, for there was in it that rigor of demonstration, that accuracy of statement, which marched so well with his sturdy uprightness, his straight thinking, and his unbending integrity; and there was also in it that beauty of expression, that perfection of form, that appeal to the imagination, which reflected his literary power, his literary appreciation, and his splendid hold on written speech. I wonder whether there may not have been some hidden harmony between the man, the spirit of the man, and the agency which he chose for the revelation of his spirit to us.

In Old England you have, perhaps, seen the dark green ivy climbing up the grey walls of an ancient church or of a college building. You have seen that ivy laying hold of one stone after another, finding sustenance where there appeared to be none, clutching tight the walls and giving them new strength, as well as new beauty for those who came to see and new charm to the building of which the wall was a part. It was that sort of relationship which Professor Van Amringe bore to his beloved college. Like the ivy, he climbed up over its outer walls and into its inner spirit to give it new strength, new power, new beauty, new grace, and new charm. He shed over everything with which he came in contact the charm of a great and lovable personality.

Personalities are the dominating influences in the works of men. Success, true success, may more easily and more accurately be estimated in terms of personality than in terms of possession. He whose efforts are devoted to acquisition for self, finds those efforts ended and dead when the breath passes from his body. But he whose life is spent in acquiring power over others for their service and for their good, grows rich and powerful and successful thereby, and lays up treasure for himself, " where neither moth nor rust does consume, and where thieves do not break through nor steal," for he has laid up treasure in the hearts of thousands and tens of thousands of human beings.

You have seen a stone cast in the still water. You have seen the ripple move from the place where the stone fell out toward the sandy shore, growing slighter and smaller until it was almost invisible, and you have perhaps said to yourselves that the effect of that stone thrown in the still pond was over and that the waves, tiny as they were, could get no farther than the sandy shore. But the eye of science tells you, not so. It tells you that that change in the physical constitution of the universe, however slight, however infinitesimal, goes on to the outermost edge of infinite space, and that, somewhere, out beyond the farthest reach of human thought or imagination, there is some slight change due to that stone dropping in the still water. What, then, shall we say of the endless power of a human life? What shall we say of the waves of affection, of influence for good and of stimulus, that have gone out from the life of our great teacher? Where shall they be thought to stop? Not on the sandy shore of your life and mine, but out into the infinite beyond our lives and the lives of our children and our children's children they shall reach. We have no instruments refined enough to calculate these happenings, but we know that the happenings are there.

So we reflect on the infinite power of an endless life, on the power of a personality that gave itself for generations of others with love, with the love that made of every effort a joy and of labor a delight. And when in the fullness of time that happy, useful life is ended without pain and without suffering, we cannot truly mourn; we must rejoice, we must rejoice for our great legacy, we must rejoice for our beloved teacher and friend, we must rejoice that the influence and the relationship between us can never end.

ANTHEM.

PRAYER:

Almighty and everlasting God, we yield unto Thee most high praise and hearty thanks for the wonderful grace and virtue declared in all Thy saints, who have been choice vessels of Thy grace and the lights of the world in their several generations, most humbly beseeching Thee to give us grace to follow the example of their steadfastness in Thy faith and obedience to Thy holy commandments, that, at the day of the general resurrection, we, with all those who are of the mystical body of Thy Son, may be set on His right hand and hear that His most joyful voice: Come, ye blessed of My Father, inherit the Kingdom prepared for you from the foundation of the world. Grant this, O Father, for Jesus Christ's sake, our only Mediator and Advocate. Amen.

RECESSIONAL HYMN 391.

POSTLUDE.

# EDITORIAL COMMENT

**The Autumn Registration**

The public press in its autumn news of the colleges is wont to give most emphasis to size and growth. "Biggest on earth" still compels attention; quantity is objective and number is a standard which any one may apply. There is indeed some slight excuse for taking size as an index of public service; but even the least critical reader knows that this index may be entirely misleading. Here at Columbia there are evidences of a growing dislike of this emphasis, of a sensitiveness not unlike that of a parent with an awkwardly overgrown child. We even question the authenticity of the newspaper reports and wonder whether the addition of a few thousands to the total of the preceding year may not have been made automatically in the newspaper office. In any case we wish to know the facts, whatever they are, and their significance if this can be determined. An increase in size at the expense of high standards would be universally deplored. We know as a matter of fact that there has been no lowering of standards, that on the contrary standards have in many instances been very much advanced. The Schools of Mines, Engineering and Chemistry recently went upon a graduate basis. There was doubt in the minds of some regarding the practicability of such a plan. A graduate engineering school is all very well, but not if it has no students. It was clear that the new school must depend for its students in large part upon Columbia College. A year ago, in addition to 13 students who had dropped back from the old course, there were 71 new students in the college who were preparing for the new advanced course. This year in a freshman class of 303, as against 300 a year ago, there are 92 new candidates for the advanced courses. The fact that in addition to the freshmen a number have entered from other colleges, either as members of higher classes or as non-matriculated students with a view to preparing for the advanced engineering courses, is a source of legitimate satisfaction. Columbia College has grown, partly in consequence of this change, though not wholly so. Each year a considerable number—this year 116—have come from other colleges, attracted in most cases by the wider educational opportunities which they find here. Although the freshman class this year is little larger than last year, the total membership of the college is larger by 101;—1,113 as compared with 1,012. More old students have returned than in any previous year. It is interesting to note that in no year since 1902 has Columbia College failed to grow. The growth has been steady, but seldom large enough in any one year to cause serious difficulty in providing suitable instruction. It seems to be agreed that our students are unusually serious in purpose and less given to wasting time and opportunity than college students are popularly supposed to be. The new class promises to live up to this reputation. The gymnasium examinations indicate that it is distinctly superior physically to any other class of recent years.

Barnard College is still hampered by lack of room, and the increase in tuition fees which is general in the University has been greater in Barnard than elsewhere. These circumstances account in part, if not entirely, for a smaller entering class this year. The increase in fees has affected Columbia College as well. Fifty students who were admitted did not register; this was due in almost every instance to financial causes. The registration in the School of Architecture is distinctly smaller for reasons not easily to be determined. Each of the other schools shows an increase, though in most of them it is not excessive. The exceptions are the graduate schools, particularly the School of Education. The increase in the School of Education is 40 per cent.; in the other graduate schools it amounts to about 20 per cent. Registrations under the department of Extension Teaching have greatly increased. The growth in the Summer Session was also large.

Some part of this growth is due to the presence of foreign students who would otherwise have studied in Europe, and a still larger part, no doubt, to the presence of American students who might otherwise have studied abroad; but, after all, the increase in the student body as a whole is not greater than in some other years. It has not yet been possible to make a detailed study of the situation, and even after such a study it might not be possible to account completely for the growth in the departments in which growth is largest. In ten years the College has grown 86.7 per cent.; in five years the Law School has grown 41.5 per cent. But Teachers College is 114 per cent. larger than ten years ago, and the Schools of Political Science, Philosophy and Pure Science have increased the number of their students by nearly 150 per cent., while the Summer Session has grown over 353 per cent. and the reorganized Extension Teaching Department exceeds all precedent. Our metropolitan situation accounts in part for our numbers, but it does not explain the very rapid growth in certain schools. The increased demand throughout the country for better trained teachers goes far toward explaining the great increase in the number of Teachers College students and of graduate students generally. This, added to the desire of many college students to employ a part of the long vacation for purposes of systematic study, accounts for a considerable part of the increase in the Summer Session. The very wide educational opportunity presented in each of these schools is well adapted to meet the demands in question; the increasing demand makes the obligation to increase the value and effectiveness of the opportunity constantly more urgent.

The department of Extension Teaching offers wider educational opportunities and fewer restrictions upon admission than any other department of the University except the Summer Session. Mature persons who are unable to avail themselves of the opportunities offered by the several faculties of the University find here an opportunity for instruction without formal admission requirements. They are not members of the University in the full sense of the word; they enter into its life in only the slightest way; but if their motive in coming is, as it is supposed to be, the bare desire for more knowledge, we are witnessing an educational phenomenon of vast significance, though just what that significance is in all its aspects no one can yet state.

A. L. J.

**Mr. Schiff's Gift to Barnard**

Mr. Jacob H. Schiff's munificent gift of $500,000 to Barnard College for the Students' Hall makes it possible for the College to proceed at once with the erection of this much needed building. Mr. Arnold Brunner, who is to be the architect, is at work on the plans, and ground will probably be broken by December.

With the aid of this spacious new hall, Barnard will at last be able to make some adequate provision for the social and physical comfort and development of her students. A large gymnasium, a swimming pool, exercise rooms, and instructors' offices will enable the Department of Physical Education to carry on its work under very favorable circumstances. Large lunch rooms for faculty and students, reception rooms, rest rooms, physician's offices, reading rooms, class studies, and offices for student organizations will provide for the comfort, pleasure, and health of the college and will release in the present academic buildings considerable space for lecture rooms and laboratories.

In accordance with the desire of the donor, the new hall will be made to serve as far as possible as a centre for the social and religious activities of the women students of the entire University. Rooms will probably be set apart for the use of the various religious and philanthropic organizations, and all the facilities of the building will be made available for the use of women from all parts of the University, so far as this may be done without undue interference with the regular work of Barnard College. In the Summer Session especially the Students' Hall should serve as a most valuable centre for the thousands of women who come to Columbia from all sections of the country.

The University owes to Mr. Schiff sincere gratitude for his generous and far-sighted gift to its women students.

V. C. G.

**The Philolexian Play**

The Philolexian Society of Columbia College gave on November 19 and 20 *The Spanish Tragedy*. This is the sixth in a series of revivals begun by the society in 1911 and including successively *Ralph Roister Doister, Friar Bacon and Friar Bungay, The Shoemakers' Holiday, The Silent Woman,* and *King Leir*. Under the direction of Professor Tassin the performances have risen so far above the usual undergraduate level as to hold audiences by something more than antiquarian interest. The vitality felt in these old plays by audiences has been felt no less by the actors, both in the opportunities of individual parts and in cooperation. A good performance of the sort is now established as a fruitful direction of communal endeavor, a way of doing "something for the college" that is thoroughly worth while for all concerned. Here is the wider significance, not only at Columbia but elsewhere. Princeton, for instance, was kindled somewhat earlier by the new undergraduate activity. Those friendly observers of college life who have been urging that it needs to be recalled to intellectual directions should take heart from this and other ways in which the drama is vindicating afresh its communal interest.

**Publications of the Dramatic Museum**

Too few members and alumni of the University are acquainted with the Dramatic Museum in Philosophy Hall, already an important beginning for what promises to become an invaluable collection of materials relating to the history and practice of dramatic art and a lasting memorial to the enterprise and wisdom of Professor Brander Matthews, its founder.

Already its models of theaters, sets of various productions, photographs and prints of famous actors and playwrights, and such necessary data as playbills, stage jewels, and curious properties make the Museum highly useful to the student who wishes to come into intimate relations with stage history. And it becomes clear even from a cursory inspection that there are many lines along which development may proceed if a full equipment is to be reached. For instance, the time might well come when the annual revival of Philolexian, or the productions of student plays of significant merit, could be made easier by the treasures of the Dramatic Museum. It is to be hoped that it may afford not only a synopsis of the general history of the stage, but a full and indispensable record of the theater in America. Starting as it does, it should never allow itself to be surpassed in this respect.

The books of the Museum furnish a working library for dramatic history and art in the exacter sense of the terms, and likewise for opera, dance, pantomime, shadow pictures, marionettes, circuses, and pageants. The growth of the library is steady and systematic. Its latest activity is a series of Publications, of which eight volumes have so far appeared. The first series, Papers on Playmaking, comprises the first complete English version of Lope de Vega's *New Art of Making Plays,* translated by Professor W. T. Brewster and edited by Professor Matthews, Bronson Howard's *Autobiography of a Play,* edited by Augustus Thomas, Brunetière's *Law of the Drama,* translated by Philip M. Hayden and edited by Henry Arthur Jones, and Pinero's *Robert Louis Stevenson as a Dramatist,* edited by Clayton Hamilton. The second series, which is just appearing, Papers on Acting, is made up of William Gillette's *Illusion of the First Time in Acting,* edited by George Arliss, Constant Coquelin's *Art and the Actor,* translated by Abbey Langdon Alger and edited by Henry James, Fleeming Jenkin's *Mrs. Siddons as Lady Macbeth and Queen Katherine,* edited by Professor Matthews, and Talma's *Reflexions on Acting,* edited by Henry Irving and with a review by Fleeming Jenkin. Detailed comment is not needed to emphasize the interest and value of these Publications, which are to be followed by still others at an early date.

C. V. D.

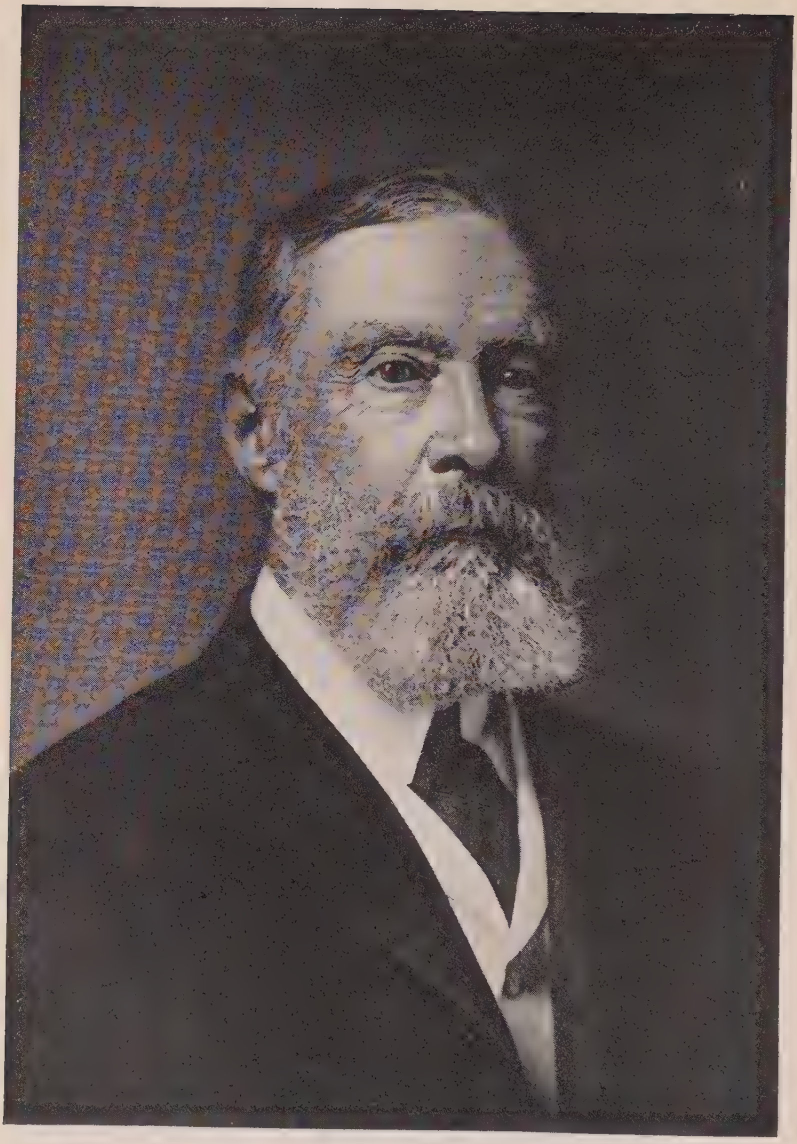
The word repeated oftenest about John Howard Van Amringe during the weeks since his death is personality. Influence is a term too abstract for him. Talk about him with any of the men who filled Trinity Church at his funeral and you will stir an anecdote or a description. In the ears of hundreds of alumni is a clear echo of his voice. At the Yale bi-centennial in 1901 the President of the United States singled him out among the host of dignitaries and broke from the academic procession to seize him by the hand. No one could forget him; he was too vivid and kindling.

**"Van Am"**

This personality was not cherished and studied; it grew. The idea of cultivating it would have stirred his wholesome laughter, or perhaps one of those indignant flashes which made one think of Dr. Johnson. The older alumni have seen him come slowly to his full power, not anxiously nor impatiently, but by a kind of ripening. Thus Columbia College found at its crisis that it had a spokesman as sure and steady as he was strong.

That joyous confidence was rooted in something deeper than physical exuberance. Physically vital he was, indeed, always heartily fond of athletics, seeming in his carriage to defy time; but his voice rang also with faith. He believed in Columbia College; and he made everyone around him believe, until he became almost the college incarnate. When in a throng of alumni we rose to one of his speeches with husky cheers and moist eyes, it was because he had uttered all our hearts. "Van Am" was Columbia College.

In this classical sense he was an orator. Others, says Newman in that fine appreciation of Cicero, write Latin; he writes Roman. This classical conception of oratory as the result of ripe and varied powers expressing communal aspirations has had few more distinct exemplars in college. That in academic life it is worth the patient development, the broad education, the honest rejection of hasty success, that our hasty time is prone to disparage, no son of Columbia can doubt.



Francis Delafield

**Francis Delafield**

The death of Dr. Francis Delafield last summer removed from the medical profession a man who probably exerted as profound and beneficent an influence upon contemporary medical thought in this country as any man of his time. Born into the best traditions of the profession and entering upon it with exceptional earnestness, he devoted a long life, not only to practice, but to teaching and research; and in all of these fields he achieved distinguished success. A rare power of mental concentration, unusual clearness of intellectual vision, together with industry and perseverance, made him successful in research work in pathological anatomy, in which he was a pioneer. Mental directness, which led him straight to the heart of things; perception, which enabled him quickly and unerringly to separate the essential from the unessential, the true from the false; courage, which knew no fear; and above all, absolute and uncompromising honesty—all of these combined to make him one of the greatest teachers that this generation of physicians has known. An innate shyness narrowed the circle of his intimate friends, and it was given to but few of the many who admired him to know his singular sweetness and kindness of heart. Only his laboratory companions and the many doctors and others whom he had cared for in desperate illness, with a frankness that was almost blunt but which was strangely comforting and helpful,—only these knew him well. To the very end of a long life he did not weary of the practice of medicine, and he exhibited the rare spectacle of a man of the highest laboratory achievement who never lost his passion for caring for the sick. His many and important medical-school and hospital positions and the titles of his numerous and valuable contributions to medical literature, matter but little here. His real immortality will be the influence he exerted upon fellow physicians and students throughout a long and earnest life, a permanent and indestructible force, leading generation after generation of doctors, who will not even know his name, to the better practice of the profession he loved.

W. B. J.

**A Comparative Study of the Salaries of Teachers and School Officers**

Bulletin, 1915, No. 31, of the United States Bureau of Education continues reports made by the Committee of the National Education Association on Teachers' Salaries and Cost of Living in January, 1913, and July, 1914. In the first report of this Committee an attempt was made to measure the cost of living as it affected the economic and social conditions of teachers in five typical cities. The second report gave the actual salaries paid to teachers in cities having more than five thousand population, the salary schedules of certain city school systems for the year 1912–13 and in previous years, and salaries paid in universities, colleges, normal schools, and other state educational institutions, together with the laws relating to the salaries in various states of the Union. This last report compares salaries paid in 1903–4 with salaries paid in 1912–13. From the data presented in the three reports, one is convinced that teachers are poorly paid,—not so well, for example, as other municipal employees, such as firemen or policemen, and in some cases, not so well as the workmen in the building trades. The present bulletin contains valuable tables which show the percentage of the whole school budget spent for the salaries of teachers, text-books, wages of janitors and other employees, fuel, and the like. Possibly the most valuable table in the bulletin is the one giving the average and median salaries, and percentage of variability from the median salary, of elementary school teachers in cities having over five thousand inhabitants. From this table it will be possible for teachers or administrative officers to compare adequately the situation with respect to the salaries paid to teachers in their own community with other cities of similar size throughout the United States.

It is noteworthy that the report is made possible by a cooperative arrangement between the Bureau of Education and the National Education Association's Committee on Teachers' Salaries. The Committee and the Commissioner of Education acknowledge their indebtedness for the statistical work, which makes up the bulk of the report, to Miss Roberta King, and for interpretive comment upon the comparative tables to Dr. Harlan Updegraff.

G. D. S.

---

The Index Digest of State Constitutions, prepared by the Legislative Drafting Research Fund of Columbia University, is one of the

**The Index Digest of State Constitutions**

notable publications of the year. Although its preparation had been planned for some time, the members of the Research Fund had hoped to have at least two years in which to execute their undertaking. But the demands of the New York Constitutional Convention were so imperative that the workers had but a half year for their task. Moreover, persons outside the permanent staff of the Drafting Bureau had to be called in and small opportunity was afforded for that constant consultation of editors which the directors of the Bureau deem "essential to the production of an accurate and well-balanced work of this kind."

In view of these facts the Research Fund contemplates a revised edition of the work in the near future, and invites criticisms and suggestions from everyone who has occasion to examine it. That the book is susceptible of improvement, at least in details of classification, cannot be doubted. Nor can there be any doubt that the editors will do their utmost to make the revised edition as nearly perfect as possible. Constitutional conventions are imminent in other states, and the demand for the volume will be continuous. The revision of State Constitutions has become something of a fad. An Index Digest must be supplemented annually, or it soon is obsolete. It is clear, therefore, that the Research Fund entered upon a large enterprise when it determined to put out and keep up this publication.

It is the more gratifying to friends of the University to know that the volume proved most useful to members of the New York Convention, and received hearty and intelligent commendation. No one can examine it without joining in such comments as the following: "This is really a monumental piece of work"; "A striking addition to the literature of American constitutional law"; "A most comprehensive Digest"; "The most valuable document put into the hands of the members of the Convention."

Although the Index Digest is the most conspicuous achievement of the Drafting Bureau, it is but a single example of the valuable public service which that branch of the University has been performing since its foundation. Convinced as its members are that "the proper arrangement and wording of a statute so that the intent may be clear and needless litigation and confusion avoided is a distinct art governed by scientific rules capable of definite expression," they are making converts to this view among congressmen and State legislators. The American Bar Association is also looking to our bureau for advice and guidance in the matter of statute drafting, as is evident from the report of the Special Committee on the subject published in the July number of the American Bar Association Journal.

F. M. B.

---

**Matters Pan-American**

The three articles on South America in this issue, added to the widely circulated article on Henry Clay and Pan-Americanism by Professor Moore in the September issue, express the same ideals as the second Pan-American Scientific Congress, to be held in Washington, December 27--January 8. The provisional program is comprehensive, suggesting topics of immediate interest in each of the following sections: I Anthropology; II Astronomy, Meteorology and Seismology; III Conservation of Natural Resources, Agriculture, Irrigation, and Forestry; IV Education; V Engineering; VI International Law, Public Law, and Jurisprudence; VII Mining and Metallurgy, Economic Geology, and Applied Chemistry; VIII Public Health and Medical Science; IX Transportation, Commerce, Finance, and Taxation. The delegate of the University is appropriately Professor John Bassett Moore. The alternate is Professor E. B. Wilson, and several other Columbia scientists will attend.

The Macmillan Company has just published *A Brief Bibliography* of books in English, Spanish and Portuguese relating to the republics commonly called Latin-American, with comments, by Peter H. Goldsmith, Director of the Pan-American Division of the American Association for International Conciliation. "Several lists of books", says the preface, "relating to the southern countries of the Western Hemisphere have been published; but as they contain the titles of works of unequal value, and at the same time are entirely wanting in critical comment, they have failed to supply the urgent demand that exists for guidance in buying and reading. . . . The method pursued in making up the [present] list was as follows: first, to introduce the titles of widely heralded works, without regard to their merit, in order to discriminate between them; and, second, to bring forward less well known publications so as to draw attention to their excellencies. . . . The obligation to consider the serious influence of books upon international relations seems not to have been generally recognized . . . else many of those who have betaken themselves to authorship would either have written differently or refrained altogether from writing.

. . . As a result of this failure to recognize responsibility, a vast quantity of blunderingly conceived, hastily composed and faultily written literature regarding foreign nations has been turned out by inexperienced, ill informed and strongly biased writers of all the more important countries. . . . The Philistines roam the world unhindered, and criticism is the sole weapon with which to keep them in discipline. Until writers realize that only what is just and true in matter, and what is finished in form is worthy to be published, such unsparing criticism as that which characterizes this work must be continued."

There are some three hundred items, and a single index of both countries and subjects is arranged according to countries.

---

**Opportunities for Foreign Students**

Bulletin, 1915, number 27, of the United States Bureau of Education, is Samuel Paul Capen's *Opportunities for Foreign Students at Colleges and Universities in the United States.* This is a valuable compilation of statistics, and more. About a quarter of the space is given to a consecutive survey, first of the organization of our education, and then of such social aspects as living conditions, athletics, fraternities and other societies, and the college realization of democracy. "Doubtless the most characteristic feature of the American college or university community is its democracy. A spirit of good comradeship in work and play pervades the typical college. No barriers are raised between groups or individuals because of wealth or family connections. A student stands or falls on the strength of his own attainments and personal likeableness. Cliques represented by the clubs and fraternities just mentioned are formed within the college itself, to be sure, but they seldom bear any relation to outside social alignments. The most influential and exclusive college fraternity may include in its membership sons of parents of every grade of wealth and every calling. Indeed, the typical American college community rather makes a cult of democracy, and since it is saturated with the idealism of youth and is more homogeneous than any other community, it is able to practice democracy with comparatively little hardship.

"For the most part the same informal relations exist between students and professors as among the students themselves. Few professors now assume superiority in their dealings with students or demand special deference on the strength of their position. The American university professor of to-day regards himself as a fellow student with those whom he teaches, a little older and more experienced, but essentially on the same plane. The relations between professors and students, then, are like those between younger and older men elsewhere. This condition contributes to a better mutual understanding, a more complete harmony of purpose in the university community than used to prevail in the past. It has minimized, also, the need for disciplinary action on the part of the faculty."

The Pan-American Division of the Association for International Conciliation has prepared a translation of this bulletin for distribution, by special arrangement with the Bureau of Education, in countries whose language is Spanish.

---

**The President's Annual Report**

The annual report of the President of the University is, as usual, a document of national interest. In university administration, there is pointed out the increasing success of our steady effort "to get all matters of administration out of the hands of faculties, boards and committees, and into the hands of individuals chosen for their competence in administrative work and for their special knowledge of a particular subject. In no other way could the work of the University have been carried on, and in no other way could the present very excellent administrative system have been worked out. One of the good results which follow upon separating administration from a plural executive is that faculties, boards and committees are left free to devote their time and thought to the consideration and formulation of educational policies." Extension teaching, widening beyond the imagination of a few years ago, may open, the President suggests, a new field of public service by offering instruction in English, history, economics, politics, and American literature to adult aliens. At the other academic pole is the recommendation of an administrative board of research. So the report ranges from academic freedom and the public criticism of professors to the success of student self-government. One of the most interesting observations is on the shift of effective academic organization from faculties to departments. In its other topics, no less than in these, the report expresses a university consciousness which is all the more stimulating to Columbia because it is significant for the whole country.

# UNIVERSITY LEGISLATION

## THE TRUSTEES

### OCTOBER MEETING

**General Administration.**—(1) The President reported the death of the following University officers:

On June 9, 1915, William R. Ware, LL.D., Emeritus Professor of Architecture, in his eighty-fourth year.

On June 18, 1915, Albert Plaut, a Trustee of the College of Pharmacy since 1895, in his fifty-ninth year.

On July 16, 1915, St. Clair McKelway, Chairman of the Advisory Board of the School of Journalism, in his seventy-first year.

On July 17, 1915, Francis Delafield, M.D., Emeritus Professor of the Practice of Medicine, in his seventy-fourth year.

On July 31, 1915, Albert H. Tompkins, Chief Clerk in the Treasurer's Office, in his fifty-fifth year.

On September 10, 1915, John Howard Van Amringe, Ph.D., LL.D., Emeritus Professor of Mathematics, in his eighty-first year.

(2) The thanks of the Trustees were tendered:

To Charles R. Crane for his gift of $1,500, to be applied toward salaries in the Summer Session.

To the anonymous donor of the sum of $1,385, to be applied toward salaries in the Department of Pharmacology.

To Mrs. Louis K. McClymonds for her gift of $1,300 for the maintenance of the Louis K. McClymonds Scholarships in Columbia College for the academic year 1915–16.

To the American Optical Company, of Southbridge, Mass., for their gift of lens-making machinery, testing lenses, and miscellaneous apparatus, valued at $1,000.

To the Royal Netherlands Government for its gift of $875, to be applied toward the salary of the Queen Wilhelmina Lectureship for the academic year 1915–16.

To the Class of 1890 Arts and Mines for their gift of $750, to be applied toward the cost of the pylon at the corner of 116th Street and Broadway, presented by the Class in commemoration of the twenty-fifth anniversary of their graduation.

To the donors of the sum of $600, to be used for Assistance in the Department of Anthropology for the academic year 1915–16.

To the Class of '79, School of Mines, for their gift of $500 to be added to the Class of '79 Loan Fund.

To Mrs. Helen Hartley Jenkins for her gift of $500, to be applied toward the equipment of the Laboratory in Experimental Physics.

To Professor M. I. Pupin for his gift of $300 to provide instruction in Russian in the Summer Session of 1915.

To the Goulds Mfg. Co., of Seneca Falls, N. Y., for their gift of apparatus valued at approximately $275, for use in the Department of Mechanical Engineering.

To Marcellus Hartley Dodge, Class of 1903, for his gift of $250, to be applied toward the room rent in Hartley Hall, for the academic year 1915–16, of the Academic Adviser to students in Columbia College.

To James Loeb for his gift of $175, to be used for the purchase of books on labor.

To F. Augustus Schermerhorn, Class of 1868, for his gift of $175 to provide a scholarship for the current academic year for a designated student in Columbia College.

To Mrs. E. T. Stotesbury for her gife of $150, to be applied toward the tuition fee for 1915–16 of a designated student in Columbia College.

To the Class of 1915 Law for their gift of a bronze bust of Chancellor Kent, together with a marble pedestal, to be placed in the vestibule of Kent Hall.

(3) The President reported to the Trustees the munificent gift of Mr. Jacob H. Schiff to Barnard College which makes possible the erection on Milbank Quadrangle of a Students' Hall, which, in addition to meeting the immediate needs of the students of Barnard College, will be available, under appropriate regulations, for the use of the women students of the entire University.

**Financial Administration.**—(4) The Budget for 1914–15, as adopted March 2, 1914, was amended by certain rearrangements in the Department of Buildings and Grounds.

(5) The Budget for 1915–16, as adopted March 1, 1915, was amended by certain rearrangements of the appropriations for chemistry, in order to provide for the newly created department of Chemical Engineering, and of the appropriations for Equipment in the Medical School, the Harkness Fund and the Departments of Clinical Instruction, Journalism, Physical Education, Physics and Romance Languages.

(6) The report of the Treasurer for the year ending June 30, 1915, was presented and referred to the Finance Committee for consideration and report.

(7) The report of the Vanderbilt Clinic for the year ending June 30, 1915, showing receipts of $42,739.02 and expenditures of $39,164.45, and a total for the year of 36,063 patients and 157,571 visits, was presented. In addition, the report of the Vanderbilt Clinic Day Camp was presented, showing receipts of $9,057.30 and expenditures of $8,719.83; and the report of the Vanderbilt Clinic Tuberculosis Camp Fund, showing receipts of $13,700.29 and expenditures of $7,012.38.

**Educational Administration.**—(8) Leaves of Absence:

*For the academic year 1915–16:*

Frederic E. Farrington, Ph.D., Associate Professor of Education in Teachers College.

George S. Fullerton, Ph.D., Professor of Philosophy.

Michael I. Pupin, Sc.D., Professor of Electro-Mechanics.

George W. Kirchwey, LL.D., Kent Professor of Law.

John Angus MacVannel, Ph.D., Professor of the Philosophy of Education in Teachers College.

Maurice Prévot, Associate in Architecture.

Camille Fontaine, B.èsL., Assistant Professor of the Romance Languages and Literatures.

Dino Bigongiari, A.B., Assistant Professor of the Romance Languages and Literatures (from October 1, 1915).

*For the first half of the academic year 1915–16:*

Henri F. Muller, Ph.D., Assistant Professor of the Romance Languages and Literatures.

James F. Kemp, Sc.D., Professor of Geology.

Jackson E. Reynolds, LL.B., Associate Professor of Law (until December 31, 1915).

Francis R. Fraser, M.D., Instructor in Clinical Medicine (until December 31, 1915).

(9) Appointments: Frederick R. Keller, E.E., to be Instructor in Electrical Engineering. Philip M. Hayden, A.M., to be Lecturer in Romance Languages and Literatures for the first half of the academic year. Bert Edward Young, Ph.D., to be Assistant Professor of the Romance Languages and Literatures. Ettore Cadorin, Ph.D., to be Lecturer in Italian. Bruno Roselli, Ph.D., to be Lecturer in Italian for the first half of the academic year. George Peckham, A.B., now Assistant in Philosophy, to be Lecturer in Philosophy. Norman T. Boggs, A.B., to be Lecturer in Philosophy. Walter B. Veazie, A.B., to be Assistant in Philosophy. Miss Emma P. Smith, A.M., to be Secretary of Women Graduate Students. Pliny E. Goddard, Ph.D., to be Lecturer in Anthropology. T. Nelson Metcalf, A.B., to be Associate in Physical Education. Julius A. Brown, A.M., to be Lecturer in Physics.

Upon the recommendation of the Administrative Board of Extension Teaching:—*Agriculture:* Theodore H. Eaton. *Commerce:* James A. Edwards. *Economics:* V. Gonzales, Hastings Lyon, Toribio Esquival Obregon, Donald S. Tucker. *English:* Estelle H. Davis, Jay Broadus Hubbell. *French:* Harold Elmer Mantz, Bert E. Young. *History:* J. Salwyn Schapiro, Martin Walker Smith. *International Law:* Paul H. Clements. *Mathematics:* J. Malcolm Bird. *Philosophy:* Roberts H. Owen. *Photoplay Writing:* Victor O. Freeburg. *Politics:* Arthur W. Macmahon. *Religion:* Richard M. Hodge. *Sanitary Engineering:* Isaac Stanley Walker. *Secretarial Correspondence:* Julia Patton. *Social Science:* E. Stagg Whitin. *Stenography:* Walter E. Ingersoll, O. C. Shepard. *Courses in Banking* (given at the N. Y. Chapter of the American Institute of Banking): John W. Edgerton, Franklin Escher, O. R. Judd, Alvin Johnson, A. F. Maxwell, F. M. Whitehall.

(10) Appointments confirmed:—*Anthropology:* Herman K. Haeberlin, Research Assistant (from August 1, 1915, to May 31, 1916). *Chemical Engineering:* Philip L. Davis, Assistant; Henry J. Masson, Assistant. *Chemistry:* George P. Russell, Assistant. *Electrical Engineering:* Earl L. Fisher, Assistant. *English:* Victor O. Freeburg, Instructor. *Geology:* Fritz Berckhemer, Assistant in Palaeontology; Marjorie O'Connell, Curator in Palaeontology. *Law:* Garrard Glenn, Lecturer; F. P. Whitaker, Assistant *Mathematics:* Donald R. Belcher, Instructor. *Zoology:* Robert S. McEwen, Assistant (vice H. J. Muller, resigned). *Clinical Instruction—Ophthalmology:* James W. White, Instructor; John B. Lynch, Instructor; Gerald H. Grout, Instructor; Mark J. Schoenberg, Instructor. *Pathology:* Calvin B. Coulter, Associate (from October 1, 1915); Benjamin S. Kline, Instructor.

Upon the recommendation of the Director of the Summer Session:—*Agriculture:* Theodore H. Eaton, Instructor. *Chemistry:* A. J. Scarlett, Assistant (vice A. P. Tanberg); George P. Russell, Assistant (vice J. E. Booge). *Economics:* G. K. Osterhus, Assistant. *English:* Victor O. Freeburg, Instructor; May Leland Hunt, Assistant; S. V. Long, Assistant. *Geography:* J. Earl Brown, Assistant. *Geology:* Caroline A. Duror, Assistant; Paul Steen-Moller, Assistant. *Library Economy:* Laura R. Gibbs, Instructor; Estelle M. Campbell, Assistant. *Mathematics:* J. J. Tanzola, Assistant. *Medicine—Bacteriology:* James G. Dwyer, Instructor (vice J. G. Hopkins); Reuben Ottenberg, Assistant. *Obstetrics:* Warren W. Hildreth, Instructor. *Physics:* F. Lowenstein, Instructor; B. Liebowitz, Assistant; Clayton Ulrey, Instructor (vice J. Blanchard). *Physiology:* J. Warner Bishop, Assistant; Carl Wurm, Assistant; Harold E. B. Pardee, Assistant; Daniel R. Lucas, Assistant; Donald Gordon, Assistant; Horatio B. Williams, Assistant. *Politics:* Walter F. Dodd, Instructor. *Philosophy:* John J. Coss, Instructor. *Romance Languages:* Mathurin Dondo, Instructor (vice L. H. Alexander); Alexander G. H. Spiers, Instructor (vice H. F. Muller). *Russian:* Elizabeth K. Reynolds, Instructor; I. S. Andreyevsky, Instructor. *Stenography:* B. F. Cooley, Assistant.

Teachers College: *Administration of Industrial Education:* Arthur D. Dean, Instructor (vice C. A. Prosser). *Educational Psychology:* Charles G. Montross, Assistant. *Educational Sociology:* J. W. Withers, Instructor (vice H. Suzzallo). *Elementary Education:* Grace A. Day, Instructor; Julia Detraz, Assistant; Gertrude Bacon, Assistant. *English:* Helen E. Diller, Assistant; Andrew T. Wylie, Assistant. *Foods and Cookery:* Clara Williams, Assistant. *General Chemistry:* Genevieve Howell, Assistant; R. W. Munford, Assistant. *History:* Maude Fiero, Assistant. *History of Education:* H. Mary Cushman, Assistant. *Household Administration:* Letitia E. Weer, Instructor (vice Mabel G. Reed). *Household Chemistry:* Helen Meston, Assistant. *Household Arts Education:* Mary E. Pillsbury, Assistant; Margaret McGowin, Assistant. *Industrial Arts:* Robert Woellner, Assistant. *Kindergarten Education:* Marguerite E. Scofield, Assistant. *Latin:* Stanley G. Blanton, Assistant. *Mathematics:* John H. Minnick, Assistant. *Metal Working:* Lewis H. Haight, Instructor (vice John J. Walsh). *Music and Speech:* Jessie Macdonald, Instructor; DeLoss Smith, Instructor. *Philosophy of Education:* Agnes Rogers, Assistant. *Physical Education:* Lillian C. Drew, Instructor; Mary E. Rankin, Assistant. *Physiological Chemistry:* Helen C. Coombs, Assistant. *Psychology of Education:* C. Amelia Winford, Assistant; Madeline Powell, Nurse. *Sociology of Education:* Edgar D. Randolph, Assistant. *Textiles and Clothing:* Anna McMillan, Instructor (vice Ruth P. Sill). *Special Appointments:* Mrs. Elizabeth Woodward, College Visitor.

(11) Changes of Title.

Thomas B. Freas, Ph.D., now Assistant Professor of Chemistry and Curator of the Chandler Museum to be Assistant Professor of Chemistry.

John C. Baker, B.S., now Assistant in Engineering Chemistry to be Assistant in Chemistry.

(12) Election to the University Council.

Francis Carter Wood, M.D., Director of Cancer Research, to be delegate from the Medical Faculty to fill the unexpired term of Dr. Starr, retired.

### NOVEMBER MEETING

**General Administration.**—(13) Mr. Henry was elected to fill the unexpired term of Mr. Lawrence on the Committee on Education.

(14) The President presented his Annual Report for the year ending June 30, 1915, which the Secretary of the University was instructed to print and distribute.

(15) In accordance with the provisions of the agreement between Columbia University and Teachers College, dated June 8, 1915, the following professors of the Faculty of Education were appointed, during the pleasure of the Trustees, to be members of a Department of Educational Research:

James E. Russell, Ph.D., Barnard Professor of Education and Dean of Teachers College.

Frank M. McMurry, Ph.D., Professor of Elementary Education.

Paul Monroe, Ph.D., Professor of the History of Education and Director of the School of Education.

Edward L. Thorndike, Ph.D., Professor of Educational Psychology.

Julius Sachs, Ph.D., Professor of Secondary Education.

John Dewey, Ph.D., Professor of Philosophy.

George D. Strayer, Ph.D., Professor of Educational Administration.

(16) The President reported the receipt of the legacy of $50,000 bequeathed to the University by the late William Douglas Sloane as an addition to the endowment fund of the Sloane Hospital for Women.

(17) The thanks of the Trustees were tendered:

To Willard V. King, of the Class of 1889, for his gift of $1,000, being the first installment of his subscription of $5,000 to the Medical School Removal and Rebuilding Fund.

To the anonymous donor of the sum of $250, to be used in connection with the University choir.

To the staff of the School of Architecture for the gift of $50, to be added to the Students' Loan Fund.

To Richard H. Troy for his gift of $2 for the benefit of the Law School.

To David Keppel, Fine Arts 1901, for his gift of the "Frederick Keppel Memorial Collection of Prints."

**Financial Administration.**—(18) The Budget for 1915–16, as adopted March 1, 1915, was amended by certain rearrangements in the Departments of Anthropology, Chemistry, Economics and Romance Languages and in the Library.

**Educational Administration.**—(19) Elections to the University Council:

From the Faculty of Practical Arts: Maurice A. Bigelow, Ph.D., Professor of Biology and Director of the School of Practical Arts. Miss Helen Kinne, Professor of Household Arts Education.

(20) Leaves of Absence cancelled: L. A. Loiseaux, Associate Professor of the Romance Languages.

(21) Promotions: James Kendall, Sc.D., Instructor in Chemistry, to be Assistant Professor of Chemistry.

(22) Appointments: M. Foucher, Professor of the Indian Languages and Literatures at the University of Paris, to be Visiting French Professor for the year 1915–16. H. A. E. Chandler, to be Lecturer in Economics for the first half-year. C. T. Murchison, to be Lecturer in Economics for 1915–16. D. S. Tucker, to be Lecturer in Economics for the second half-year. Henry N. Arnold, LL.B., to be Lecturer in Mining Law.

Upon the nomination of the Medical Faculty:—*Anatomy:* John A. Vietor, M.D., Assistant. *Biological Chemistry:* Sergius Morgulis, Ph.D., Instructor; Arnold Kent Balls, B.S., Assistant. *Medicine:* Archibald McI. Strong, M.D., Instructor (vice Dr. F. R. Fraser from Oct. 1 to Dec. 31, 1915). *Ophthalmology:* Oscar Diem, M.D., Instructor (vice Gerald G. Grout, resigned).

Upon the recommendation of the Administrative Board of Extension

Teaching:—*Arabic:* P. K. Hitti. *Chemistry:* J. C. Andrews, F. H. Griffin, E. V. Hahn, K. M. Herstein, C. H. Hunt, J. K. Marcus, R. H. Moore, K. P. Monroe. *Chinese:* Z. T. Nyi. *Civil Engineering:* W. J. Krefeld. *Commerce:* C. T. Murchison. *Education:* F. T. Baker, L. B. Earhart, B. L. Gambrill, M. B. Hillegas, S. L. Montgomery, C. E. Myers. *English:* A. Abbott, E. W. Burrill, Ethel Kelly, S. V. Long, C. M. Pang. *French:* M. L. Bergeron, P. de Monthule, J. L. Russo. *German:* A. Remy. *Medical German:* A. F. Henmann. *History:* O. D. Tolischus. *Irish:* M. A. O'Byrne. *Italian:* J. L. Russo. *Mathematics:* H. G. Woodward. *Physics:* J. A. Brown, C. Ulrey. *Portuguese:* E. E. Vann. *Educational Psychology:* M. R. Trabue. *Rumanian:* F. Vexler. *Russian:* I. S. Andreyevsky. *Spanish:* A. Tapia, J. A. Vaeth.

(23) Assignment: M. Foucher, Visiting French Professor for the academic year 1915–16, to a seat in the Faculty of Philosophy.

## UNIVERSITY COUNCIL

### OCTOBER MEETING

1. The President reported the following changes in the membership of the Council for the academic year 1915–16: Professor F. C. Wood from the Faculty of Medicine to fill the unexpired term of Professor Starr. Acting President McGiffert to represent Union Theological Seminary in place of President Brown, absent on leave. By the creation of the new Faculties of Education and of Practical Arts the two delegates from Teachers College become members of the Council from the Faculty of Education, and two new delegates, Professor M. A. Bigelow and Professor Helen Kinne, have been elected from the Faculty of Practical Arts.

2. The President reported for record the new corporate agreement between the University and Teachers College of June 8, 1915, in substitution for the agreement of April 6, 1900.

3. The following additional appointments to Fellowships and a Scholarship were made:

Barnard Fellowship:
Mary Amerman Griggs,
*Summerville, N. J.*
A.B., Vassar College, 1908. A.M., Columbia University, 1915.

Samuel Williard Bridgham Fellowship:
Frederick H. Clark,
*New York City.*
E.M., Columbia University, 1907.

Columbia Fellowship in Architecture:
Edwin Jerome Robin,
*Brooklyn, N. Y.*
Certificate of Proficiency in Architecture, Columbia University, 1915.

William Mitchell Fellowship:
Herbert W. Schneider,
*Evanston, Ill.*
A.B., Columbia University, 1915.

John D. Jones Scholarship:
Albert Marion Brown,
*Wauseon, O.*
Ph.B., Ohio State University, 1901. A.M., Washington University, 1905.

4. The following appointments to a Fellowship and Scholarship were reported for record:

William Petit Trowbridge Fellowship in Engineering:
Charles W. Drury,
*Kingston, Ontario.*
B.S., Queens University, 1909. A.M., Columbia University, 1910.

Scandinavian Scholarships:
Torsten Ingeloff,
Mechanical Engineer, Chalmers Technical Institute, Gothenburg, Sweden.
Poul Lindholm,
Structural Engineer, Royal Polytechnical School, Copenhagen, Denmark.

5. Provost William H. Carpenter was reelected Secretary of the University Council for the academic year 1915–16.

6. The Secretary reported for record that since Commencement, 1915, ninety candidates for the degree of Master of Arts and ten candidates for the degree of Doctor of Philosophy had completed all the requirements for the degree sought and were entitled to receive diplomas.

7. *Resolved,* That the Trustees of the University be requested to amend Chapter I, Section 7e, of the Statutes to read as follows:

The degree of Master of Arts, upon the recommendation of the Faculty of Education, and the degree of Bachelor of Science, upon the recommendation of the Faculties of Education and Practical Arts, in accordance with the agreement between the University and Teachers College, dated June 8, 1915.

8. *Resolved,* That the rules and regulations governing matriculation and candidacy for the degree of Master of Arts under the Faculties of Political Science, Philosophy and Pure Science in concurrence with the University Council be and hereby are adopted to govern matriculation and candidacy for the degree of Master of Arts under the Faculty of Education.